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TRANSACTIONS

OF THE

AMERICAN ASSOCIATION

OF

OBSTETRICIANS AND GYNECOLOGISTS

VOL. XXV

FOR THE YEAR 1912

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1913

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AMERICAN ASSOCIATION OF OBSTETRICIANS AND GYNECOLOGISTS

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NOTE.

The Association does not hold itself responsible for the views enunciated in the papers and discussions published in this volume.

DR. E. GUSTAV ZINKE, *Secretary*,
4 W. Seventh Avenue, Cincinnati

[Minutes and discussions stenographically reported by William Whitford, Chicago, Ill.]

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CONSTITUTION AND BY-LAWS

OF THE

AMERICAN ASSOCIATION

OF

OBSTETRICIANS AND GYNECOLOGISTS

TOGETHER WITH

MINUTES OF THE TWENTY-FIFTH ANNUAL MEETING

AMERICAN ASSOCIATION

OF

OBSTETRICIANS AND GYNECOLOGISTS.

CONSTITUTION.

I. The name of this Association shall be THE AMERICAN ASSOCIATION OF OBSTETRICIANS AND GYNECOLOGISTS.

II. Its object shall be the cultivation and promotion of knowledge in whatever relates to Abdominal Surgery, Obstetrics, and Gynecology.

MEMBERS.

III. The members of this Association shall consist of Ordinary Fellows, Honorary Fellows, Corresponding Fellows, and Senior Fellows.

The Ordinary Fellows shall not exceed one hundred and fifty in number.

The Honorary Fellows shall not exceed ten American and twenty-five foreign.

Candidates shall be proposed to the Executive Council at least one month before the first day of meeting, by two Fellows, and shall be balloted for at the annual meeting, a list of names having been sent to every Fellow with the notification of the meeting.

A two-thirds vote in the affirmative of all the members present shall be necessary to elect—fifteen Fellows at least being in attendance.

All candidates for active fellowship shall submit to the Executive Council, at least one month before the annual meeting, an original paper relating to Abdominal Surgery, Obstetrics, or Gynecology.

HONORARY FELLOWS.

IV. The power of nominating Honorary Fellows shall be vested in the Executive Council.

Their election shall take place in the same manner as that of Ordinary Fellows.

They shall enjoy all the privileges of Ordinary Fellows, excepting to vote or hold office, but shall not be required to pay any fee.

CORRESPONDING FELLOWS.

V. The Corresponding Fellows shall be recommended by the Executive Council and elected by the Association.

They shall enjoy all the priveliges of Ordinary Fellows, excepting to vote or hold office, and shall be entitled to a copy of the annual TRANSACTIONS.

They shall pay an annual fee of five dollars.

SENIOR FELLOWS.

Senior Fellows shall be nominated by the Executive Council, and elected by the Association as provided for in the election of Honorary Fellows, and they shall enjoy the same privileges as are accorded Corresponding Fellows.

OFFICERS.

VI. The officers of this Association shall be a President, two Vice-Presidents, a Secretary, a Treasurer, and six Executive Councillors.

The nomination of all officers shall be made in open session at the business meeting, and the election shall be by ballot.

The first five officers shall enter upon their duties immediately before the adjournment of the meeting at which they shall be elected, and shall hold office for one year.

["At the election next succeeding the adoption of these laws, the full number of Executive Councillors shall be elected; two for a term of three years, two for a term of two years, and two for a term of one year.

"At every subsequent election two Councillors shall be elected for a term of three years, and shall continue in office until their successors shall have been elected and shall have qualified."][1]

Any vacancy occurring during the recess may be filled temporarily by the Executive Council.

ANNUAL MEETINGS.

VII. The time and place of holding the annual meeting shall

[1]Amendment adopted September 21, 1898.

be determined by the Association or may be committed to the Executive Council each time before adjournment.

It shall continue for three days, unless otherwise ordered by vote of the Association.

AMENDMENTS.

VIII. This Constitution may be amended by a two-thirds vote of all the Fellows present at the annual meeting: *provided*, that notice of the proposed amendment shall have been given in writing at the annual meeting next preceding: and *provided, further*, that such notice shall have been printed in the notification of the meeting at which the vote is to be taken.

AMERICAN ASSOCIATION

OF

OBSTETRICIANS AND GYNECOLOGISTS.

BY-LAWS.

THE PRESIDING OFFICER.

I. The President, or in his absence, one of the Vice-Presidents, shall preside at all meetings, and perform such other duties as ordinarily pertain to the Chair.

The presiding officer shall be *ex-officio* chairman of the Executive Council, but shall vote therein only in case of a tie.

SECRETARY.

II. The Secretary shall attend and keep a record of all meetings of the Association and of the Executive Council, of which latter he shall be *ex-officio* clerk, and shall be entitled to vote therein.

He shall collect all moneys due from the members, and shall pay the same over to the Treasurer, taking his receipt therefor.

He shall supervise and conduct all correspondence of the Association; he shall superintend the publication of the TRANSACTIONS under the direction of the Executive Council, and shall perform all the ordinary duties of his office.

He shall be the custodian of the seal, books, and records of the Association.

TREASURER.

III. The Treasurer shall receive all moneys from the Secretary, pay all bills, and render an account thereof at the annual meetings, when an Auditing Committee shall be appointed to examine his accounts and vouchers.

EXECUTIVE COUNCIL.

IV. The Executive Council shall meet as often as the interests of the Association may require. The President, or any three members may call a meeting, and a majority shall constitute a quorum.

It shall have the management of the affairs of the Association, subject to the action of the house at its annual meetings.

It shall have control of the publications of the Association, with full power to accept or reject papers or discussions.

It shall have control of the arrangements for the annual meetings, and shall determine the order of the reading of papers.

It shall constitute a court of inquiry for the investigation of all charges against members for offences involving law or honor; and it shall have the sole power of moving the expulsion of any Fellow.

ORDER OF BUSINESS.

V. The Order of Business at the annual meetings of the Association shall be as follows:

1. General meeting at 10 o'clock A. M.
   a. Reports of Committees on Scientific Questions.
   b. Reading of Papers and Discussion of the same.
2. One business Meeting shall be held at half-past nine o'clock A. M. on the first day of the session, and another on the evening of the second day (unless otherwise ordered by vote), at which only the Fellows of the Association shall be present. At these meetings the Secretary's record shall be read; the Treasurer's Accounts submitted; the reports of Committees on other than scientific subjects offered; and all Miscellaneous Business transacted.

PAPERS.

VI. The titles of all papers to be read at any annual meeting shall be furnished to the Secretary *not later* than one month before the first day of the meeting.

No paper shall be read before the Association that has already been published, or that has been read before any other body.

Not more than thirty minutes shall be occupied in reading any paper before the Association.

Abstracts of all papers read should be furnished to the Secretary at the meeting.

All papers read before the Association shall become its sole property if accepted for publication; and the Executive Council may decline to publish any paper not handed to the Secretary *complete* before the final adjournment of the annual meeting.

QUORUM.

VII. The Fellows present shall constitute a quorum for all business, excepting the admission of new Fellows or acting upon amendments to the Constitution, when not less than fifteen Fellows must be present.

DECORUM.

VIII. No remarks reflecting upon the personal or professional character of any Fellow shall be in order at any meeting, except when introduced by the Executive Council.

FINANCE.

IX. Each Fellow, on admission, shall pay an initiation fee of twenty-five dollars, which shall include his dues for the first year.

Every Fellow shall pay, *in advance* (*i.e.*, at the beginning of each fiscal year) the sum of twenty dollars annually thereafter.

[A fiscal year includes the period of time between the first day of one annual meeting and the first day of the next.]

Any Fellow neglecting to pay his annual dues for two years may forfeit his membership, upon vote of the Executive Council.

The Secretary shall receive, annually, a draft from the President, drawn on the Treasurer, for a sum, to be fixed by the Executive Council, for the services he shall have rendered the Association during the year.

A contingent fund of one hundred dollars shall be placed annually at the disposal of the Secretary for current expenses, to be disbursed by him, and for which he shall present proper vouchers.

ATTENDANCE.

X. Any Fellow who shall neither attend nor present a paper for five consecutive years, unless he offer a satisfactory excuse, shall be dropped from fellowship, upon vote of the Executive Council.

RULES.

XI. *Robert's Rules of Order* shall be accepted as a parliamentary guide in the deliberations of the Association.

AMENDMENTS.

XII. These By-Laws may be amended by a two-thirds vote of the Fellows present at any meeting; *provided*, previous notice in writing shall have been given at the annual meeting next preceding the one at which the vote is to be taken.

OFFICERS FOR 1912–1913.

PRESIDENT.

MILES F. PORTER, Fort Wayne.

VICE-PRESIDENTS.

CHAS. N. SMITH, Toledo.
JAMES E. SADLIER, Poughkeepsie.

SECRETARY.

E. GUSTAV ZINKE, Cincinnati.

TREASURER.

HERMAN E. HAYD, Buffalo.

EXECUTIVE COUNCIL.

WILLIAM HENRY HUMISTON, Cleveland.
HUGO OTTO PANTZER, Indianapolis.
CHARLES L. BONIFIELD, Cincinnati.
HERMAN E. HAYD, Buffalo.
JOHN W. KEEFE, Providence.
X. O. WERDER, Pittsburgh.

HONORARY FELLOWS.

1899.—Ballantyne, John William, M.D., F.R.C.P.E., F.R.S. Edin. Lecturer on Midwifery and Gynecology, School of Medicine of the Royal Colleges, Surgeons' Hall, Edinburgh; Physician to the Royal Maternity Hospital, Edinburgh; formerly President of the Edinburgh Obstetrical Society; Examiner in Midwifery in the University of Edinburgh; Honorary Fellow of the Glasgow Obstetrical and Gynecological Society. 19 Rothesay Terrace, Edinburgh, Scotland.

1889.—Bantock, George Granville, M.D., F.R.C.S. Ed. Surgeon to the Samaritan Free Hospital. Broad Meadow, King's Norton, Birmingham, England.

1889.—Barbour, Sir A. H. Freeland, M.A., B.S.C., M.D., F.R.C.P. Ed., F.R.S. Ed. Lecturer on Midwifery and Diseases of Women in the Edinburgh Medical School; Assistant Physician to the Royal Maternity Hospital; Assistant Physician for Diseases of Women to the Royal Infirmary; Physician to the Women's Dispensary; Fellow of the Edinburgh and London Obstetrical Societies, and of the British Gynecological Society; Corresponding Fellow of the Royal Academy of Medicine, Turin. 4 Charlotte Square, Edinburgh, Scotland.

1890.—Championniere, Just. Lucas, M.D. 3 Avenue Montaigne, Paris, France.

1888.—Cordes, August Elisee, M.D. Member of the Royal College of Physicians, London; Fellow of the Obstetrical Society of London and of the British Gynecological Society; Corresponding National Member of the Obstetrical and Gynecological Society of Paris; Honorary Fellow of the Detroit Gynecological Society; late "Chirurgien-adjoint" of the Obstetrical and Gynecological Clinic at the Maternity at Geneva; Consulting Accoucheur of the Miséricorde Hospital, etc.; Perpetual member of the Société Obstétricale de France, Paris, France. 3 Chemin du Square, Geneva, Switzerland.

1909.—CROFFORD, THOMAS JEFFERSON, M.D. (Transferred from Ordinary List.) Office, Goodwyn Institute, Memphis, Tenn.

1889.—CROOM, SIR J. HALLIDAY, M.D., F.R.C.P.E., F.R.C.S.E., F.R.S.E. Professor of Midwifery in the University of Edinburgh; Consulting Physician to the Royal Infirmary; Physician to the Royal Maternity Hospital; late President of the Royal College of Surgeons, Edinburgh. 25 Charlotte Square, Edinburgh, Scotland.

1891.—FERNANDEZ, JUAN SANTOS, M.D. Prado, No. 105, Havana, Cuba.

1889.—FREUND, WILLIAM ALEXANDER, M.D. Emeritus Professor and Director of the Clinic for Diseases of Women in the University of Strassburg. Kleiststrasse 9, Berlin W., Germany.

1912.—GILLIAM, DAVID TOD, M.D. Emeritus Professor of Gynecology, Starling-Ohio Medical College; Gynecologist to St. Anthony Hospital; Member of the American Medical Association, Ohio State Medical Association, Columbus Academy of Medicine; Honorary Member of the Northwestern Ohio Medical Association; Ex-president, Franklin County Medical Society; *Vice-president*, 1905. 333 East State Street, Columbus, Ohio.

1894.—JACOBS, CHARLES, M.D. Professor of the Faculty of Medicine of Brussels; Secretary-General of the Permanent Committee of the Periodic International Congress of Gynecology and Obstetrics; Honorary President of the Belgian Society of Gynecology and Obstetrics; Honorary Fellow of the Gynecological Societies of New York and Chicago; Member of the Southern Surgical and Gynecological Association; Corresponding Member of the Gynecological Society of Paris; Surgeon to the Brussels Polyclinic. 53 Boulevard de Waterloo, Brussels, Belgium.

1889.—LEOPOLD, G., M.D. Professor in the Royal Clinic for Diseases of Women. 90 Pfotenhauerstrasse, Dresden, Germany.

1905.—MCGRAW, THEODORE A., M.D. 73 Cass Street, Detroit, Mich.

1890. MARTIN, AUGUST, M.D. Emeritus Professor of Gynecology in the University of Greifswald. Keithstrasse 14, Berlin W. 62, Germany.

1897.—MATHEWS, JOSEPH MCDOWELL, M.D. Professor of Diseases of the Rectum and Clinical Surgery, Hospital College of Medicine; President of the Kentucky State Board of Health; First Vice-President American Medical Association, 1898; President, 1899. 411 The Masonic, Louisville, Kentucky.

1889.—NICOLAYSEN, JULIUS, M.D. Professor of Surgery in the University of Norway. Christiania, Norway.

1910.—DE OTT, DIMITRIJ OSKAROVIC. Professor of Obstetrics and Gynecology in the Royal Pavloona Clinical Institute of St. Petersburg; President of the Fifth International Congress of Obstetrics and Gynecology. Wassily Ostrow, University Place, St. Petersburg, Russia.

1891.—PIETRANERA, E., M.D. Professor of Obstetrics in the Medical Department of the National University; Director of the Maternity Branch of the Clinical Hospital. 2711 Calle Rio Adaria, Buenos Ayres, Argentine Republic, S. A.

1889.—SCHULTZE, BERNHARD SIGMUND, M.D. Professor of Gynecology; Director of the Lying-in Institute and of the Gynecological Clinic. 2 Sellierstrasse, Jena, Germany.

1890.—SEGOND, PAUL, M.D. Professor of Clinical Surgery of the Faculty of Medicine, Paris; Surgeon to the Salpétrière. 4 Quai Debilly, Paris, France.

1899.—SINCLAIR, SIR WILLIAM JAPP, M.A., M.D. (Aberd.), M.R.C.P. Professor of Obstetrics and Gynecology, Owens College, Victoria University; Physician to the Manchester Southern Hospital for Diseases of Women and Children. Garvock House, Dudley Road, Whalley Range, Manchester, England.

1896.—STERNBERG, GEORGE MILLER, A.M., M.D., LL.D. Surgeon General U. S. Army (Retired). 2005 Massachusetts Avenue, Washington, D.C.

1888.—WILLIAMS, SIR JOHN, BART., M.D., F. R. C. P. Blaen Llynant, Aberystwyth, Cardiganshire, Wales.

Total, twenty-three Honorary Fellows.

HONORARY FELLOWS, DECEASED.

1892.—Boisliniere, L. Ch., A.B., M.D., L.L.D., Saint Louis, Mo., 1896.

1889.—Charpentier, Louis Arthur Alphonse, M.D., Paris, France, 1899.

1890.—Corson, Hiram, M.D., Plymouth Meeting, Pa., 1896.

1889.—Dunlap, Alexander, A.M., M.D., Springfield, O., 1894.

1888.—Edis, Arthur Wellesley, M.D., Lond. F.R.C.S., M.R.S.C.S., London, England, 1893.

1889.—Eklund, Abraham Fredrik, M.D., Stockholm, Sweden, 1898.

1891.—Fisher, George Jackson, A.M., M.D., Sing Sing, N. Y., 1893.

1896.—Gaston, James McFadden, A.M., M.D., Atlanta, Ga., 1903.

1892.—Green, Traill, M.D., L.L.D., Easton, Pa., 1897.

1889.—Keith, Thomas, M.D., London, England, 1896.

1894.—Maclein, Donald, M.D., Detroit, Mich., 1903.

1895.—Mastin, Claudius Henry, M.D., L.L.D., Mobile, Ala., 1898.

1891.—Moses, Gratz Ashe, M.D., Saint Louis, Mo., 1901.

1905.—Myers, William Herschel, M.D., Fort Wayne, Ind., 1907.

1889.—Saenger, Max, M.D., Prague, 1903.

1890.—Savage, Thomas, M.D., F.R.C.S. Eng., Birmingham, England, 1907.

1894.—Slaviansky, Kronid, M.D., St. Petersburg, Russia, 1898.

1888.—Smith, J. Greig, M.A., C.M., M.B., F.R.S.E., Bristol, England, 1897.

1899.—Storrs, Melancthon, A.M., M.D., Hartford, Conn., 1900.

1888.—Tait, Lawson, M.D., L.L.D., F.R.C.S.E., Birmingham, England, 1899.

1905.—Taylor, William Henry, M. D., *President*, 1888–1889, Cincinnati, Ohio, 1910.

1900.—Thornton, J. Knowsley, M.B., M.C., Cambridge, England, 1904.

1901.—Weber, Gustav C. E., M.D., L.L.D., Willoughby Ohio, 1912.

1889.—Von Winckel, F.M.D., Munich, Germany, 1912.

1905.—Wyman, Walter, M.D., Washington, D.C., 1911.

CORRESPONDING FELLOWS.

1899.—Beuttner, Oscar, M.D. Professor of the Faculty of Medicine. 2 Place de la Fasterie, Geneva, Switzerland.

1903.—Crozel, G., M.D. Professor Libre of Gynecology. Collonges au Mont d'Or (Rhone), France.

1903.—Ellis, Guilherme, M.D. Chief Surgeon to the Real Sociedade de Beneficencia Portuguese Hospital. 6 Rua Aurora, S. Paulo, Brazil, S. A.

1891.—Griffin, Herbert Spohn, B.A., M.D. Surgeon to Hamilton City Hospital; Examiner in Obstetrics, University of Toronto. 157 Main Street, Hamilton, Ontario, Canada.

1903.—Lane, Horace Manley, M.D., LL.D. President of Mackenzie College, S. Paulo, Brazil. 184 Rua da Consolacao, S. Paulo, Brazil, S. A.

1891.—Machell, Henry Thomas, M.D., L.R.C.P. Ed. Lecturer on Obstetrics, Women's Medical College; Surgeon to St. John's Hospital for Women; Physician to Victoria Hospital for Sick Children and to Hillcrest Convalescent Home. 95 Bellevue Avenue, Toronto, Ontario, Canada.

1898.—Wright, Adam Henry, B.A., M.D. Univ. Toronto, M.R.C.S., Eng. Professor of Obstetrics in the University of Toronto; Obstetrician and Gynecologist to the Toronto General Hospital and Burnside Lying-in Hospital, *President*, 1891. (Transferred from Ordinary List, 1898.) 30 Gerrard Street, East, Toronto, Ont., Canada.

Total, seven Corresponding Fellows.

ORDINARY FELLOWS.

1902.—Abrams, Edward Thomas, A.M., M.D. Consulting Surgeon to the Lake Superior General Hospital; Member of the Michigan State Medical Society; Member of the American Medical Association. Surgeon to St. Joseph's Hospital. Dollar Bay, Mich.

1895.—Bacon, Joseph Barnes, M.D. Professor of Rectal Diseases at the Post-Graduate Medical School; Instructor in Clinical Surgery in the Medical Department of Northwestern University, Chicago. Macomb, Ill.

1911.—Bainbridge, William Seaman, M. D., A. M., M. S., Sc. D. Adjunct Professor, New York Post-Graduate Medical School, 1902–6; Professor New York Polyclinic Medical School and Hospital since 1906; Surgeon, New York Skin and Cancer Hospital; Attending Surgeon, New York City Children's Hospitals and Schools; Consulting Surgeon, Manhattan State Hospital, New York Home for Dependent Crippled Children, College of Dental and Oral Surgery of New York; Consulting Gynecologist, St. Andrew's Hospital (New York) and St. Mary's Hospital, Jamaica, Long Island; Honorary President International Congress for Study of Tumors and Cancers, Heidelberg, Germany, 1906. 34 Gramercy Place, New York City.

1895.—Baldwin, James Fairchild, A.M., M.D. Surgeon to Grant Hospital, 125 South Grant Avenue. Residence, 405 E. Town Street, Columbus, Ohio.

1903.—Bandler, Samuel Wyllis, M.D. Instructor in Gynecology in the New York Post-Graduate Medical School and Hospital; Adjunct Gynecologist to the Beth Israel Hospital. 134 West Eighty-seventh Street, New York, N.Y.

1911.—Barrett, Channing W., M. D. Gynecologist, Chicago Polyclinic School and Hospital; Professor of Gynecology and Clinical Gynecology, College of Physicians and Surgeons, Medical Department, University of Illinois; Attending Surgeon and

Gynecologist, Marion Sims Sanitarium; Obstetrician, Cook County Hospital. 446 St. James Place, Chicago.

1907.—Bell, John Norval, M.D. Adjunct Professor of Obstetrics and Gynecology at Detroit College of Medicine; Gynecologist to Harper Hospital Polyclinic. Residence, 418 Fourth Avenue; Office, 506 Washington Arcade, Detroit, Mich.

1892.—Blume, Frederick, M.D. Gynecologist to the Allegheny General Hospital and Pittsburg Free Dispensary; Obstetrician to the Roselia Maternity Hospital; Consulting Gynecologist to the Mercy Hospital; President of the Pittsburg Obstetrical Society, 1892. Office, Jenkins Building, Pittsburg, Pa.

1900.—Bonifield, Charles Lybrand, M.D. Professor of Clinical Gynecology in the Medical College of Ohio; President of the Cincinnati Academy of Medicine, 1900; Gynecologist to the Good Samaritan, Christ's, and to Speer's Memorial Hospitals; formerly President of the Cincinnati Obstetrical Society; Secretary of the Section on Obstetrics and Gynecology, American Medical Association, 1901–4; Chairman, 1905; *Vice-president*, 1907. Residence, corner Washington and Gholson Avenues; Office, 409 Broadway, Cincinnati, Ohio.

1896.—Bosher, Lewis C., M.D. Professor of Practice of Surgery and Clinical Surgery, Medical College of Virginia; Visiting Surgeon, Memorial Hospital, Richmond. 422 East Franklin Street, Richmond, Va.

Founder.—Boyd, James Peter, A.M., M.D. Professor of Obstetrics, Gynecology and Diseases of Children in the Albany Medical College; Gynecologist to the Albany Hospital; Fellow of the British Gynecological Society. Fellow of the Royal Society of Medicine. 152 Washington Avenue, Albany, N. Y.

1912.—Brown, George Van Amber, M.D. Gynecologist, Cystoscopist, German Polyclinic; Gynecologist, Providence Hospital. Residence, 55 Gladstone Ave.; Office, 32 Adams Ave., W., Detroit, Michigan.

1894.—Brown, John Young, M.D. Professor of Clinical Surgery in Saint Louis University; Chief Surgeon to St. John's Hospital; President of the Mississippi Valley Medical Association, 1898; *Vice-president*, 1905; *President*, 1906; *Executive Council*, 1907–8. Residence, 303 North Grand Avenue; Office, 612 Metropolitan Building, Saint Louis, Mo.

1908.—Buteau, Samuel H. M.D. Former member of California State Board of Medical Examiners; formerly Visiting Surgeon to Almeda County Hospital. Residence, 1052 Telegraph Avenue; Office, 1155 Broadway, Oakland, Cal.

1906.—Cannaday, John Egerton, M.D. Surgeon to the Charleston General Hospital; Surgeon to McMillan's Hospital Charleston; Fellow of the Southern Surgical and Gynecological Association; Non-resident Honorary Fellow of the Kentucky State Medical Association; Fellow West Virginia Medical Association, Virginia Medical Society, American Medical Association, Tri-State Society Virginia and the Carolinas, and American Association of Railway Surgeons. Office, Capital City Bank Building, corner Capital and Virginia Streets., Charleston, W. Va.

Founder.—Carstens, J. Henry, M.D. Professor of Obstetrics and Clinical Gynecology in the Detroit College of Medicine; Gynecologist to the Harper Hospital; Attending Physician to the Woman's Hospital; Obstetrician to the House of Providence; President of the Detroit Gynecological Society, 1892. *Vice-president*, 1888–89; *President*, 1895; *Executive Council*, 1896–98. 620 Woodward Avenue, Detroit, Mich.

1895.—Chase, Walter Benajah, M. D. Visiting surgeon to the Bethany Deaconess Hospital; Consulting Obstetrician and Gynecologist to the Long Island College Hospital; Consulting Gynecologist to the Nassau Hospital, Mineola L. I.; Consulting Gynecologist to the Jamaica Hospital; President of the Council of the Long Island College Hospital; Fellow of the Brooklyn Gynecological Society (President, 1893); Member Medical Society County of Kings (President, 1892); Permanent Member Medical Society State of New York; Member of the Brooklyn Pathological Society; Member of the Associated Physicians of Long Island; and Honorary Member of the Queens County Medical Society; *Executive Council*, 1899–1904. 1050 Park Place, Borough of Brooklyn, New York.

1904.—Congdon, Charles Ellsworth, M.D. Gynecologist to the City Hospital for Women. Office, 859 Humboldt Parkway, Buffalo, N. Y.

1901.—Crile, George W., A.M., M.D. Professor of Clinical Surgery in the Western Reserve University Medical College; Surgeon to St. Alexis's Hospital; Associate Surgeon to Lake-

side Hospital. *Vice-president*, 1907. Residence, 6203 Euclid Avenue; Office, Osborn Building, Cleveland, Ohio.

1912.—Crotti, Andre, M.D. Surgeon Grant Hospital and Children's Hospital. Residence, 1728 E. Broad Street; Office, 151 E. Broad Street, Columbus, Ohio.

1905.—Crossen, Harry Sturgeon, M.D. Clinical Professor of Gynecology in Washington University; Gynecologist to Washington University Hospital; Associate Gynecologist to Mullanphy Hospital; Consulting Gynecologist to Bethesda, City and Female Hospitals. Residence, 4477 Delmar Avenue; Office, 310 Metropolitan Building, Saint Louis, Mo.

1912.—Darnall, William Edgar, A.B., M.D. Gynecologist, Atlantic City Hospital; Consulting Surgeon to North American Children's Sanitarium for the Treatment of Surgical Tuberculosis, and Home for Incurables, Longport, New Jersey. Residence and Office, 1704 Pacific Ave., Atlantic City, N. J.

1911.—Davis, Asa Barnes, M. D. Attending Surgeon of the Society of the Lying-in Hospital of the City of New York; Consulting Gynecologist to the Vassar Brother's Hospital, Poughkeepsie, N. Y. 42 E. 35th Street, New York.

1903.—Davis, John D.S., M.D., LL.D. Professor of Surgery in the Birmingham Medical College; Surgeon to Hillman Hospital; ex-President of Jefferson County Medical Society and of the Board of Health of Jefferson County. *Vice-president*, 1909. 2031 Avenue G., Birmingham, Ala.

1902.—Deaver, Harry Clay, M.D. Professor of Surgery in the Woman's Medical College of Pennsylvania; Surgeon to the Episcopal and the Stetson Hospitals and to the Children's Hospital of the Mary J. Drexel Home. 1534 North Fifteenth Street, Philadelphia, Pa.

1896.—Deaver, John Blair, M.D. Professor of Clinical Surgery at the University of Pennsylvania; Surgeon in Chief to the German Hospital; Consulting Surgeon to the Germantown Hospital. 1634 Walnut Street, Philadelphia, Pa.

1910.—Dice, William Gordon, A. B., M. D. 240 Michigan Street, Toledo, Ohio.

1909.—Dickinson, Gordon K., M.D. Surgeon to the City and Christ Hospitals; Consulting Surgeon to Bayonne Hospital. 280 Montgomery Street, Jersey City, N. J.

1892.—DORSETT, WALTER BLACKBURN, M.D. Professor of Gynecology and Pelvic Surgery, Medical Department of the St. Louis University; Gynecologist to the Evangelical Deaconess Hospital, St. Louis Maternity, Missouri Baptist Sanatarium and Rebeckah Hospital; Member of the Southern Surgical and Gynecological Society, Western Surgical Society and the Southwestern Medical Association; President, St. Louis Medical Society, 1892; President, Missouri State Medical Association, 1900; Vice-president, Western Surgical Society, 1912; Chairman of the Section on Obstetrics and Gynecology, American Medical Association, 1907; *Vice-president* (A. A. of O. and G.) 1898; *President*, 1904; *Executive Council*, 1905–1907. Office, Linmar Bldg., corner Washington and Vandeventer Avenues, Saint Louis, Mo.

1899.—EASTMAN, THOMAS BARKER, A.B., M.D. Professor of the Medical and Surgical Diseases of Women, Central College of Physicians and Surgeons; Gynecologist to the City Hospital, City Dispensary, and Central Free Dispensary. 309 Pennway Building, Indianapolis, Ind.

1904.—ELBRECHT, OSCAR H., M.D. Visiting Surgeon to St. Louis City Hospital and Allied Institutions: Consulting Surgeon to Bethesd a Hospital; Consulting Surgeon to St. Louis Maternity Hospital and Chief of Staff. Office: Nos. 423–25 Metropolitan Bldg. St. Louis, Mo.

1906.—ERDMANN, JOHN FREDERICK, M.D. Clinical Professor of Surgery in University-Bellevue Hospital Medical College; Surgeon to Gouverneur, St. Mark's, and Sydenham Hospitals. 60 West Fifty-second Street, New York, N. Y.

1911.—FINDLEY, PALMER, B. E., M. D. Professor of Gynecology, College of Medicine, University of Nebraska. 418 Brandeis Theater Building, Omaha, Neb.

1910.—FOSTER, CURTIS SMILEY, A. B., M. D. Gynecologist to the Western Pennsylvania Hospital, Pittsburg. Residence, 5749 Ellsworth Avenue; Office, 308 Diamond Bank Building, Pittsburg, Pa.

1903.—FRANK, LOUIS, M.D. Professor of Abdominal and Pelvic Surgery in the Medical Department of Kentucky Uni-

versity; Surgeon to Louisville City Hospital; Surgeon and Gynecologist to the Broadway Infirmary. Residence, 1415 Fourth Avenue; Office, 400 The Atherton, Louisville, Ky.

1912.—FURNISS, HENRY DAWSON, M.D. Adjunct Professor of Gynecology, New York, Post-Graduate Medical School and Hospital; Assistant Attending Gynecologist New York Post-Graduate Hospital. Residence and Office 393 West End Ave., New York, N. Y.

1902.—GILLETTE, WILLIAM J., M.D. Professor of Abdominal Surgery and Gynecology in the Toledo Medical College; Surgeon to Robinwood Hospital. 1613 Jefferson Street, Toledo, Ohio.

1895.—GOLDSPOHN, ALBERT, M.S., M.D. Professor of Gynecology, Post-Graduate Medical School; Senior Gynecologist, German Hospital; Attending Gynecologist, Post-Graduate and Charity Hospitals. *Vice-President*, 1901. Residence, 2120 Cleveland Avenue; Office, 34 Washington Street, Chicago, Ill.

1912.—GOODMAN, SYLVESTER JACOB, PH.G., M.D. Surgeon and Obstetrician Grant Hospital; Lecturer of Obstetrics; Training School for Nurses, Grant Hospital; Consulting Surgeon, Actor's Fund of America, etc., etc. Residence and Office 238 State Street, Columbus, Ohio.

1903.—GUENTHER, EMIL ERNEST, M.D. Senior Assistant Gynecologist and Obstetrician to St. Barnabas's Hospital; Attending Surgeon to the German Hospital, Newark. 159 West Kinney Street, Newark, N. J.

1900.—HAGGARD, WILLIAM DAVID, JR., M.D. Professor of Gynecology, Medical Department University of Tennessee; Professor of Gynecology and Abdominal Surgery, University of the South (Sewanee); Gynecologist to the Nashville City Hospital; President of the Nashville Academy of Medicine; Secretary of the Section on Diseases of Women and Obstetrics, American Medical Association, 1898; Fellow (and Secretary) of the Southern Surgical and Gynecological Association; Member of the Alumni Association of the Woman's Hospital, N. Y. *Vice-president*, 1904. 148 Eighth Avenue, North, Nashville, Tenn.

1906.—HALL, JOSEPH ARDA, M.D. Clinical Assistant in Gynecology at the Miami Medical College, Cincinnati. 628 Elm Street, Cincinnati, Ohio.

1889.—Hall, Rufus Bartlett, A. M., M. D. Professor of Clinical Gynecology in the Ohio-Miami Medical College, Medical Department of University of Cincinnati; Gynecologist to the Cincinnati Hospital; Surgeon in charge of the Hall Hospital; Member of the British Medical Society; of the Southern Surgical and Gynecological Association; of the American Medical Association; of the Ohio State Medical Society (President, 1900); of the Cincinnati Academy of Medicine (President, 1909); of the Cincinnati Obstetrical Society (Ex-President). *Vice-president*, 1891; *President*, 1900; *Executive Council*, 1904-1909. Berkshire Building, 628 Elm Street, Cincinnati, Ohio.

1902.—Hamilton, Charles Sumner, A.B., M.D. Professor of the Principles of Surgery in Sterling Medical College; Surgeon to Mt. Carmel and the Children's Hospitals. 142 South Garfield Street, Columbus, Ohio.

1910.—Harrar, James Aitken, M. D. Attending Surgeon to the Lying-in Hospital of the City of New York. Residence and Office 29 East Seventy-seventh Street, New York, N. Y.

1894.—Hayd, Herman Emil, M. D., M. R. C. S. Eng. Surgeon to the German Deaconess Hospital; Surgeon to the German Hospital. *Vice-president*, 1903; *Executive Council*, 1908-1910; *President*, 1911. 493 Delaware Avenue, Buffalo, N. Y.

1908.—Hedges, Ellis W., A.B., M.D. Visiting Surgeon to Muhlenberg Hospital, Plainfield, N. J. 703 Watchung Avenue, Plainfield, N. J.

1910.—Hill, Isadore Leon, A. B., M. D. Clinical Instructor of Obstetrics at Cornell University Medical College; Visiting Obstetrician to the Red Cross Hospital; Attending Obstetrician to Sydenham Hospital. 616 Madison Avenue, New York, N. Y.

1891.—Holmes, Josus Billington Sanders, M.D. Professor of Obstetrics in the Southern Medical College; President of the Georgia State Medical Association, 1890; Member of the Southern Surgical and Gynecological Association; Member of the American Medical Association. Valdosta, Ga.

1912.—Hotaling, Albert Steuben, M.D. Professor of Obstetrics; College of Medicine, Syracuse University; Syracuse Hospital for Women and Children and Syracuse Free Dispensary. 801 East Genesee Street, Syracuse, N. Y.

1891.—Howitt, Henry, M.D., M.R.C.S. Eng. Surgeon to the Guelph General and St. Joseph's Hospital, Guelph; Member of the British and Ontario Medical Associations; Medical Health Officer for the City of Guelph. *Vice-president*, 1895. 221 Woolwich Street, Guelph, Ontario, Canada.

1905.—Huggins, Raleigh Russell, M.D. Surgeon to St. Francis Hospital. *Vice-president*, 1910. 1018 Westinghouse Building, Pittsburg, Pa.

1895.—Humiston, William Henry, M.D. Associate Professor of Gynecology in the Medical Department of Western Reserve University; Gynecologist in Chief to St. Vincent's Charity Hospital; Consulting Gynecologist to the City Hospital; President of the Ohio State Medical Society, 1898. *Executive Council*. 1902–1903, 1908, 1910–1911. *President*, 1909. Residence, 2041 East Eighty-ninth Street; Office, 536 Rose Building, Cleveland, Ohio.

1901.—Ill, Charles L., M.D. Surgeon to the German Hospital; Assistant Gynecologist to St. Michael's and St. Barnabas's Hospitals; Obstetrician to St. Barnabas's Hospital, Newark; Assistant Gynecologist to All Souls' Hospital, Morristown. 188 Clinton Avenue, Newark, N. J.

Founder.—Ill, Edward Joseph, M.D. Surgeon to the Woman's Hospital; Medical Director of St. Michael's Hospital; Gynecologist and Supervising Obstetrician to St. Barnabas's Hospital; Consulting Gynecologist to the German Hospital and the Bnoth Israel Hospital of Newark, N. J., to All Souls' Hospital, Morristown, N. J., and to the Mountain Side Hospital, Montclair, N. J.; Member of the Southern Surgical and Gynecological Association; Vice-president from New Jersey of the Pan-American Medical Congress of 1893; President of the Medical Society of the State of New Jersey, 1907. *Vice-president*, 1893; *President*, 1899; *Executive Council*, 1901–1903. 1002 Broad Street, Newark, N. J.

1909.—Jacobson, Julius H., M.D. Professor of Gynecology and Clinical Surgery, Medical Department Toledo University; Surgeon to Lucas City Hospital; Gynecologist to St. Vincent's Hospital, Toledo. 2050 Franklin Street, Toledo, O.

1910.—Jenks, Nathan, B. S., M. D. Lecturer on Obstetrics at the Detroit College of Medicine; Visiting Physician to the

Woman's Hospital and Infant's Home; Visiting Obstetrician to the New Providence Hospital, Detroit. Residence, 231 Burns Street; Office, 271 Woodward Avenue, Detroit, Mich.

1906.—JONAS, ERNST, M.D. Clinical Professor of Surgery in Washington University Medical School; Surgeon in Charge of the Surgical Clinic at the Washington University Hospital; Gynecologist to the Saint Louis Jewish Hospital; Visiting Surgeon to St. Louis City Hospital; Consulting Surgeon to St. John's Hospital; Surgeon to the Martha Parsons Free Hospital for Children. Residence, 4495 Westminster Place; Office, 465 North Taylor Avenue, Saint Louis, Mo.

1910.—JONES, ARTHUR THOMS, M. D. Visiting Gynecologist to St. Joseph's Hospital, Providence. 81 Elm Grove Avenue, Providence, R. I.

1902.—KEEFE, JOHN WILLIAM, M.D. Attending Surgeon to the Gynecological Department of St. Joseph's Hospital; Attending Surgeon to the Rhode Island Hospital; Consulting Surgeon to the Providence Lying-in Hospital. *Vice-president*, 1908. *Executive Council*, 1911. 259 Benefit Street, Providence, R. I.

1910.—KENNEDY, JAMES W., M. D. Associate Gynecologist and Obstetrician to the Philadelphia Dispensary. 1409 Spruce Street, Philadelphia, Pa.

1911.—KING, JAMES E., M. D. Professor of Clinical Gynecology, Medical Department, University of Buffalo, New York; Attending Gynecologist, Buffalo General and Erie County Hospital and Good Samaritan Dispensary; Fellow Royal Society of Medicine, London, England. 1248 Main Street, Buffalo, N. Y.

1908.—KIRCHNER, WALTER C. G., A. B., M. D. Formerly superintendent and Surgeon in charge of the Saint Louis City Hospital. Office, Metropolitan Building, Saint Louis, Mo.

1898.—LANGFITT, WILLIAM STERLING, M.D. Surgeon in chief to St. John's Hospital. Office, 8047 Jenkins Building, Pittsburg. Pa.

1901.—LINCOLN, WALTER RODMAN, B.A., M.D. Lecturer on Gynecology, College of Physicians and Surgeons of Cleveland. Lennox Building, corner Erie Street and Euclid Avenue, Cleveland, Ohio. (Senior member).

1910.—LOBENSTINE, RALPH WALDO, A. B., M.D. Attending Surgeon to the Lying-in Hospital of the City of New York; Gynecologist to Bellevue Hospital Dispensary. Residence, 780 Madison Avenue; Office, 162 East Seventy-first Street, New York, N. Y.

1890.—LONGYEAR, HOWARD WILLIAMS, M. D. Professor of Gynecology and Abdominal Surgery in the Detroit Post-Graduate Medical School; Clinical Professor of Gynecology in the Detroit College of Medicine; Gynecologist to Harper Hospital; Physician to the Woman's Hospital; President of the Detroit Gynecological Society, 1889; Chairman of the Section on Obstetrics and Gynecology of the Michigan State Medical Society, 1892. *Vice-president*, 1893; *President*, 1905; *Executive Council*, 1906-1908. 271 Woodward Avenue, Detroit, Mich.

1911.—LOTHROP, EARL P., A. B., M. D. Gynecologist to the Buffalo Woman's Hospital. 153 Delaware Avenue, Buffalo, N. Y.

1910.—LOTT, HENRY STOKES, M. D. 123 Cherry Street, Winston, N. C.

1896.—LYONS, JOHN ALEXANDER, M.D. Instructor in Gynecology at the Post-Graduate Medical School; Gynecologist and Lecturer to Nurses at the Chicago Hospital. Residence, 6848 Anthony Avenue; Office, 4118 State Street, Chicago, Ill.

1910.—MCCLELLAN, BENJAMIN BUSH, A.B., M.D. Member American Medical Association; ex-President Ohio State Medical Society; Surgeon to McClellan Hospital. Residence, 636 South Detroit Street; Office, 7 East Second Street, Xenia, Ohio.

Founder.—MCMURTRY, LEWIS SAMUEL, A.M., M.D., LL.D. Professor of Gynecology in the Hospital College of Medicine; Gynecologist to Sts. Mary and Elizabeth Hospital; Fellow of the Edinburgh Obstetrical Society; Fellow of the British Gynecological Society; Corresponding Member of the Obstetrical Society of Philadelphia and of the Gynecological Society of Boston; Member (President, 1891) of the Southern Surgical and Gynecological Association; President American Medical Association, 1905. *Executive Council*, 1891–1892, 1895–1905; *President*, 1893. Suite 542, The Atherton, Louisville, Ky.

1910.—McPherson, Ross, A. B., M. D. Attending Surgeon to the Lying-in Hospital of the City of New York. Residence, 26 Grammercy Park, East; Office 20 West Fiftieth Street, New York, N. Y.

Founder.—Manton, Walter Porter, M.D. Professor of Clinical Gynecology and Adjunct Professor of Obstetrics, Detroit College of Medicine; Gynecologist to Harper Hospital and the Eastern Michigan Asylum for the Insane; Vice-president of Medical Board of the Woman's Hospital and Foundling's Home; Consulting Gynecologist to the Northern Michigan Asylum and St. Joseph's Retreat; Gynecic Surgeon to the House of the Good Shepherd; President of the Detroit Academy of Medicine, 1892–1894; President of the Detroit Gynecological Society, 1890; Fellow of the British Gynecological Society; Fellow of the Royal Microscopical Society and of the Zoological Society of London. *Vice-pres dent,* 1894. 32 Adams Avenue, W., Detroit, Mich.

1911.—Marvel, Emery, M.D. Chief Surgeon and Gynecologist, Private Hospital Association's Atlantic City Consulting Surgeon and Gynecologist, Jewish Seashore Home, Atlantic City, 1801 Pacific Avenue, Atlantic City, N. J.

Founder.—Miller, Aaron Benjamin, M.D. Professor of Gynecology in the Medical Department of Syracuse University; Gynecologist to St. Joseph's Hospital, House of the Good Shepherd and Dispensary. *Vice-president,* 1899, 1904; *President,* 1910; *Executive Council,* 1911. 326 Montgomery Street, Syracuse, N. Y.

1905.—Miller, John D., M.D. Assistant to the Chair of Clinical Gynecology in the Medical College of Ohio, University of Cincinnati; Gynecologist to the Good Samaritan Hospital. N. E. Corner Clifton Avenue and W. McMillan Street, Cincinnati, Ohio.

1911.—Moots, Charles W., B.S., M.D. Professor Anatomy and Clinical Surgery, Toledo Medical College, Medical Department, Toledo University; Gynecologist to Flower Hospital. 1140 The Nicholas, Toledo, O.

1907.—Moriarta, Douglas C., M.D. Senior Surgeon to Saratoga Hospital; Surgeon in chief to Saint Christian Hospital for Children; Director of State Experimental Station at Saratoga. 511 Broadway, Saratoga Springs, N. Y.

1904.—Morris, Lewis Coleman, M.D. Professor of Gynecology and Abdominal Surgery in the Birmingham Medical College; Secretary, Medical Association State of Alabama, 1904; Member of Jefferson County Board of Health. *Vice-president*, 1911. 1203 Empire Building, Birmingham, Ala.

1890.—Morris, Robert Tuttle, A.M., M.D. Professor of Surgery in the New York Post-Graduate Medical School and Hospital. *Vice-president*, 1892; *Executive Council*, 1906, 1908–1911; *President*, 1907. 616 Madison Avenue, New York, N. Y.

1894.—Murphy, John Benjamin, A.M., M.D. Professor of Surgery and Head of Department North Western University; Chief Surgeon to Mercy Hospital and St. Joseph's Hospital; Attending Surgeon to Wesley Hospital and Columbus Hospital; Consulting Surgeon to Alexian Brothers', Cook County Hospitals; President of the American Medical Association, 1911. Residence, 3305 Michigan Avenue; Office, 400 Reliance Building, 100 State Street, Chicago, Ill.

1904.—Newman, Louis Edward, A.M., M.D. President of the Saint Louis Obstetrical and Gynecological Society, 1904. 5381 Waterman Avenue, Saint Louis, Mo.

1896.—Noble, George Henry, M.D. Gynecologist to the Grady Hospital; Secretary to the Section on Obstetrics and Gynecology of American Medical Association, 1897; Member of the Southern Surgical and Gynecological Association. 186 South Pryor Street, Atlanta, Ga.

1903.—Noble, Thomas Benjamin, M.D. Professor of Abdominal Surgery in the Central College of Physicians and Surgeons; Consultant in the Diseases of Women at the City Hospital, City Dispensary, and Protestant Deaconess's Hospital, Indianapolis. 427 Newton Claypool Building, Indianapolis, Ind.

1907.—Olmsted, Ingersoll, M.D. Surgeon to the City and St. Joseph's Hospitals, Hamilton, Ont. 215 South James St., Hamilton, Ontario, Canada.

1899.—Pantzer, Hugo Otto, M.D. Professor of Clinical Gynecology in the Indiana Medical College, Medical Department of Purdue University; Gynecologist to City Hospital, City Dispensary, St. Vincent's and Deaconess's Hospitals; Member of Indianapolis, Indiana State, Ohio Valley, Mississippi Valley, Medical Associations and Indianapolis Gynecological Associa-

tion. *Executive Council*, 1907–1911. 224 North Meridian Street, Indianapolis, Ind.

1890.—PEARSON, WILLIAM LIBBY, M.D. 713 Union Street, Schenectady, N. Y.

1899.—PFAFF, ORANGE G., M.D. Adjunct Professor of Obstetrics and Diseases of Women in the Medical College of Indiana; Gynecologist to the City, Deaconess's, and St. Vincent's Hospitals. 1337 North Pennsylvania Street, Indianapolis, Ind.

1898.—PORTER, MILES F., M.D. Surgeon to Hope Hospital; Professor of Surgery in the Indiana University School of Medicine; ex-President Indiana State Medical Society. *Vice-president*, 1902; *President* 1912-1913. 207 West Wayne Street, Fort Wayne, Ind.

1903.—POUCHER, JOHN WILSON, M.D. Consulting Surgeon to Vassar Brothers Hospital, Poughkeepsie. 339 Mill Street, Poughkeepsie, N. Y.

1904.—REDER, FRANCIS, M.D. 4629 Cook Avenue, Saint Louis, Mo.

Founder.—REED, CHARLES ALFRED LEE, A.M., M.D. Professor of Gynecology and Abdominal Surgery in the Cincinnati College of Medicine and Surgery and in the Woman's Medical College of Cincinnati; Surgeon to the Cincinnati Free Surgical Hospital for Women; Secretary-General of the First Pan-American Medical Congress, 1893; Member of the Southern Surgical and Gynecological Association; Fellow of the British Gynecological Society; President of the American Medical Association, 1901. *Executive Council*, 1890–1897; *President*, 1898. Rooms 60 and 62, The Groton, N. E. corner Seventh and Race Streets, Cincinnati, Ohio.

1909.—ROSENTHAL, MAURICE I., M.D. Surgeon to Saint Joseph's Hospital. 336 W. Berry Street, Fort Wayne, Ind.

1902.—RUNYAN, JOSEPH PHINEAS, M.D. Division Surgeon to the Choctaw, Oklahoma and Gulf Railroad; Secretary of the Arkansas State Medical Association, President, 1904. 1514 Schiller Avenue, Little Rock, Ark.

1906.—RUTH, CHARLES EDWARD, M.D. Professor of Surgery and Clinical Surgery in the Keokuk Medical College (College

of Physicians and Surgeons); Surgeon to the Chicago and Rock Island Pacific Railway. Des Moines, Iowa.

1903.—SADLIER, JAMES EDGAR, M.D. Consulting Surgeon to Highland Hospital, Poughkeepsie. *Vice-president*, 1909. 295 Mill Street, Poughkeepsie, N. Y.

1909.—SANES, K. ISADORE, Gynecologist to the West Penn Hospital; Consulting Gynecologist to the Montefiore Hospital, Pittsburg. Residence, 345 McKee Place; Office, Jenkins Building, Pittsburg, Pa.

1910.—SCHILDECKER, CHARLES BUSHFIELD, M. D. Assistant Gynecologist to Western Pennsylvania Hospital; Coroner's Physician of Allegheny County. Residence 414 Rebecca Street; Office, 1105 Park Building, Pittsburg, Pa.

1904.—SCHWARZ, HENRY, M.D. Professor of Obstetrics, Medical Department of Washington University. *Vice-President*, 1911. 440 North Newstead Avenue, Saint Louis, Mo.

1901.—SCOTT, N. STONE, A.M., M.D. Professor of Surgery, College of Physicians and Surgeons, Cleveland; Consulting Surgeon to City Hospital; Consulting Surgeon to St. John's Hospital; Surgeon to the Out-patient Department of Cleveland General Hospital. Residence, 531 Prospect Avenue; Office, 603–604 Citizens' Building, Cleveland, Ohio.

1895.—SELLMAN, WILLIAM ALFRED BELT, M. D. Gynecologist to The Biedler and Sellman Sanitoraum; Member of the Medical and Chirurgical Faculty of Maryland; also of the Baltimore City Medical Society; also of the American Medical Association; the Gynecological and Obstetrical Association of Baltimore; Physician to The Margaret J. Bennett Home for Young Ladies. *Vice-president*, 1908; *Executive Council*, 1909–1910. 5 East Biddle Street, Baltimore, Maryland.

1908.—SHERRILL, JOSEPH GARLAND, A.M., M.D. Professor of Surgery and Clinical Surgery at the University of Louisville. Office, Suite 542, The Atherton, Louisville, Ky.

1899.—SIMPSON, FRANK FARROW, A.B., M.D. Gynecologist to the Allegheny General Hospital; Consulting Gynecologist to the Columbia Hospital. *Vice-president*, 1906. Jenkins Building, Pittsburg, Pa.

1912.—SKEEL, ARTHUR JULIUS, M.D. Assistant Professor of Obstetrics, Western Reserve University; Visiting Obstetrician to City Hospital; Obstetrician to St. Clair Hospital and Assistant Obstetrician, St. Luke's Hospital. Residence and Office, 1834 East 65th Street, Cleveland, Ohio.

1901.—SKEEL, ROLAND EDWARD, M.D. Associate Clinical Professor of Gynecology in Western Reserve University; Gynecologist to St. Luke's, City, and Lutheran Hospitals; Consulting Surgeon to the Lakewood Hospital. 314 Osborn Building, Cleveland, O.

1910.—SMEAD, LEWIS FREDERIC, A. B., M. D. Surgeon to St. Vincent's Hospital, Toledo. Residence, 2921 Parkwood Avenue; Office, 242 Michigan Street, Toledo, Ohio.

1891.—SMITH, CHARLES NORTH, M. D. Surgical Chief of Flower Hospital; Gynecologist to St. Vincent's Hospital; *Vice-president*, 1910; 234 Michigan Street, Toledo, Ohio.

1904.—SMITH, WILLIAM S., M.D. Professor of Gynecology in the Maryland Medical College; Gynecologist to Franklin Square Hospital. 528 Hanover Street, Baltimore, Md.

1901.—STAMM, MARTIN, M.D. Professor of Operative and Clinical Surgery in the College of Physicians and Surgeons, Cleveland. 316 Napoleon Street, Fremont, Ohio.

1902.—STARK, SIGMAR, M.D. Professor of Obstetrics and Clinical Gynecology in the Cincinnati College of Medicine and Surgery; Gynecologist to the Jewish Hospital. 1108 East McMillan Street, Cincinnati, Ohio.

1908.—STEWART, DOUGLAS HUNT, M.D. Residence, 128 West 6th Street, New York, N. Y.

1911.—STILLWAGEN, CHARLES A., M. D. 524 Pennsylvania Avenue, Pittsburg, Pa.

1904.—SUTCLIFFE, JOHN ASBURY, A.M., M.D. Professor of Genitourinary Surgery; Indiana School of Medicine; Consulting Surgeon to St. Vincent's Infirmary; Consultant in Genitourinary Diseases to the City Hospital and to the Protestant Deaconess's Hospital. Residence, 1121 Central Avenue; Office, 155 East Market Street, Indianapolis, Ind.

1899.—SWOPE, LORENZO W., M.D. Surgeon to the Consolidated Traction Company; Chief Surgeon to Wabash Railroad,

Pittsburg Division; Surgeon to Western Pennsylvania Hospital; Surgeon to Passavant Hospital; Member of the Allegheny County Medical Society; Member of the American Medical Association. Residence, 4629 Bayard Street; Office, 1105 Park Building, Pittsburg, Pa.

1901.—TATE, MAGNUS ALFRED, M.D. Professor of Obstetrics Miami Medical College; President Cincinnati Academy of Medicine. 1905. 19 West Seventh Street, Cincinnati, Ohio.

1908.—TORRANCE, GASTON, M.D. Surgeon to Saint Vincent's and the Hillman Hospitals in Birmingham. Residence, 1626 Eleventh Avenue, South; Office, 325 Woodward Building, Birmingham, Ala.

1912.—TULEY, HENRY ENOS, A.B., M.D. Secretary Mississippi Valley Medical Association. Residence, 3 Magnolia Street, Office, 705 South Third Street, Louisville, Ky.

1907.—VANCE, AP MORGAN, M.D. Surgeon to Kentucky Masonic Widow's and Orphan's Home and Infirmary; Surgeon to Saints Mary and Elizabeth Hospital, Louisville. 835 South Fourth Avenue, Louisville, Ky.

Founder.—VANDER VEER, ALBERT, A.M., M.D., Ph.D. Professor of Didactic, Clinical, and Abdominal Surgery in the Albany Medical College; Attending Surgeon to the Albany Hospital; Consulting Surgeon to St. Peter's Hospital; Fellow of the American Surgical Association (President, 1906); Fellow of the British Gynecological Society; Member of the Southern Surgical and Gynecological Association; Corresponding Member of the Boston Gynecological Society. *Executive Council*, 1889–1891, 1895–1905; *President*, 1892. 28 Eagle Street, Albany, N. Y.

1912.—VAN SWERINGEN, BUDD, M.D. 208 Washington Boulward, Fort Wayne, Indiana.

1909.—WADE, HENRY ALBERT, M.D. Surgeon to Bethany Deaconess's Hospital; Associate Gynecologist to Williamsburg Hospital, Brooklyn. 495 Greene Avenue, Brooklyn, N.Y.

1909.—WALDO, RALPH, M.D. Gynecologist to Lebanon Hospital; Associate Surgeon to the Woman's Hospital of the State of New York. 54 W. 71st Street, New York, N.Y.

1891.—WALKER, EDWIN, M.D., Ph.D. Gynecologist to the Evansville City Hospital; President of the Indiana State Medical

Society, 1892; Member of the American Medical Association and of the Mississippi Valley Medical Association; Member of the Southern Surgical and Gynecological Association; First Vice-president American Medical Association, 1907. *Vice-president*, 1901. 712 South Fourth Street, Evansville, Ind.

1907.—WEISS, EDWARD ALOYSIUS, M.D. Assistant Gynecologist to Mercy Hospital; Obstetrician to Roselia Maternity Hospital; Associate Professor of Gynecology at Western Pennsylvania Medical College, Pittsburg. 714 Jenkins Building, Pittsburg, Pa.

1889.—WENNING, WILLIAM HENRY, A.M., M.D. Clinical Professor of Gynecology at the Miami Medical College; Chief of Staff and Gynecologist to St. Mary's Hospital. 5 Garfield Place, Cincinnati, Ohio.

Founder.—WERDER, XAVIER OSWALD, M.D. Profsseor of Gynecology at the Western Pennsylvania Medical College (Medical Department, University of Western Pennsylvania); Consulting Gynecologist at the Allegheny General Hospital; Gynecologist to the Mercy Hospital and Pittsburg Free Dispensary; Obstetrician to the Roselia Maternity Hospital; Consulting Gynecologist to St. Francis's Hospital; Consulting Surgeon to the South Side Hospital. *Treasurer*, 1888–1911. 714 Jenkins Building, Pittsburg, Pa.

1904.—WEST, JAMES NEPHEW, M.D. Professor of Diseases of Women and Secretary of the Faculty at the New York Post-Graduate Medical School and Hospital. *Vice-president*, 1906. 71 West Forty-ninth Street, New York.

1896.—WESTMORELAND, WILLIS FOREMAN, M.D. Professor of Surgery at the Atlanta Medical College. Suite 241, Equitable Building, Atlanta, Ga.

1911.—WHITE, GEORGE R., B. S., M. D. Surgeon Park View Sanitarium. 2 Liberty E., Savannah, Ga.

1909.—YATES, H. WELLINGTON, M.D. Lecturer on Obstetrics at Detroit College of Medicine; Obstetrician to St. Mary's Hospital. 1360 Fort Street, Detroit, Mich.

1907.—ZIEGLER, CHARLES EDWARD, A.M., M.D. Professor of Obstetrics in the University of Pittsburg; Medical Director of the Elizabeth Steele Magee Hospital for Women; Consulting Obstet-

rician to the Columbia Hospital and Consulting Obstetrician and Gynecologist to the Dixmont Hospital for the Insane. 354 South Highland Avenue, Pittsburg, Pa.

1900.—ZINKE, ERNST GUSTAV, M.D. Professor of Obstetrics and Clinical Midwifery in the Ohio-Miami Medical College, University of Cincinnati; Chief of Staff and Obstetrician and Gynecologist to the German Hospital; Obstetrician to the Maternity Hospital; President of Cincinnati Obstetric Society, 1887; President Academy of Medicine of Cincinnati, 1894; First Vice-president Ohio State Medical Society; Member and Chairman of Section on Obstetrics, Gynecology and Abdominal Surgery, of American Medical Association; Fellow of Southern Surgical and Gynecological Association. Honorary Member Jackson County Medical Society, Kansas City Mo. *President*, 1908; *Executive Council*, 1909–1911. *Secretary*, 4 Seventh Avenue, West, Cincinnati, Ohio.

Total, one hundred and thirty-four Ordinary Fellows.

ORDINARY FELLOWS, DECEASED.

1890.—ASDALE, WILLIAM JAMES, M.D., Beaver Falls, Pa., 1912.

Founder.—BAKER, WASHINGTON HOPKINS, M.D., Philadelphia, Pa., 1904.

1889.—BURNS, BERNARD, M.D., Allegheny, Pa., 1892.

1890.—COLES, WALTER, M.D., Saint Louis, Mo., 1892.

1889.—DAVIS, WILLIAM ELIAS B., M.D., Birmingham, Ala., 1903.

1892.—DUFF, JOHN MILTON, A.M., M.D., Ph.D., Pittsburg, Pa., 1904.

1898.—DUNN, JAMES C., M.D., Pittsburgh, Pa., 1907.

1892.—DUNNING, LEHMAN HERBERT, M.D., Indianapolis, Ind., 1906.

1895.—FERGUSON, ALEXANDER HUGH, M.D., Chicago, Ill., 1911.

1890.—FREDERICK, CARLTON CASSIUS, B.S., M.D., Buffalo, N. Y., 1911.

1891.—GIBBONS, HENRY, JR., A.M., M.D., San Francisco, Cal., 1912.

1904.—GOODFELLOW, GEORGE E., M.D., Los Angeles, Cal., 1910.

1892.—HAGGARD, WILLIAM DAVID, JR., M.D., Nashville, Tenn., 1901.

Founder.—HILL, HAMPTON EUGENE, M.D., Saco, Me., 1894.

1898.—HYDE, JOEL W., M.D., Brooklyn, N. Y., 1907.

1897.—INGRAHAM, HENRY DOWNER, M.D., Buffalo, N. Y., 1904.

Founder.—JARVIS, GEORGE CYPRIAN, M.D., Hartford, Conn., 1900.

1892.—JELKS, JAMES THOMAS, M.D., Hot Springs, Ark., 1902.

1900.—LINVILLE, MONTGOMERY, A.B., M.D., New Castle, Pa., 1910.

Founder.—LOTHROP, THOMAS, M.D., Buffalo, N. Y., 1902.

1891.—MCCANN, JAMES, M.D., Pittsburg, Pa., 1893.

1898.—MCCANN, THOMAS, M.D., Pittsburg, Pa., 1903.

1896.—MOONEY, FLETCHER D., M.D., Saint Louis, Mo., 1897.

Founder.—POTTER, WILLIAM WARREN, M.D., Buffalo, N. Y., 1911.

Founder.—PRICE, JOSEPH, M.D., Philadelphia, Pa., 1911.

1896.—RHETT, ROBERT BARNWELL, JR., M.D., Charleston, S. C., 1901.

1889.—ROHE, GEORGE HENRY, M.D., Baltimore, Md., 1899.

1892.—ROSENWASSER, MARCUS, M.D., Cleveland, O., 1910.

1890.—ROSS, JAMES FREDERICK WM., M.D., C.M., L.R.C.P., Toronto, Ontario, Canada, 1911.

1889.—SEYMOUR, WILLIAM WOTKYNS, A.B., M.D., Troy, N. Y., 1904.

1902.—SIMONS, MANNING, M.D., Charleston, S. C., 1911.

Founder.—TOWNSEND, FRANKLIN, A.M., M.D., Albany, N. Y., 1895.

MINUTES OF THE PROCEEDINGS

AT THE

TWENTY-FIFTH ANNUAL MEETING

OF THE

AMERICAN ASSOCIATION

OF

OBSTETRICIANS AND GYNECOLOGISTS

HELD AT

THE SECOR

TOLEDO, OHIO

SEPTEMBER 17, 18, AND 19, 1912

TWENTY-FIFTH ANNUAL MEETING.

SEPTEMBER 17, 18, AND 19, 1912.

The following-named Fellows were present:

BAINBRIDGE, WM. SEAMAN . . . NEW YORK.
BALDWIN, JAMES FAIRCHILD . . COLUMBUS.
BANDLER, SAMUEL W . . . . . NEW YORK.
BARRETT, CHANNING W . . . . . CHICAGO.
BELL, JOHN NORVAL . . . . . DETROIT.
BLUME, FREDERICK . . . . . PITTSBURG.
BONIFIELD, CHARLES L . . . . . CINCINNATI.
BROWN, G. VAN AMBER . . . . . DETROIT.
BUTEAU, SAMUEL H . . . . . OAKLAND, CAL.
CARSTENS, J. HENRY . . . . . DETROIT.
CRILE, GEORGE W. . . . . CLEVELAND.
CROTTI, D. ANDRE . . . . . COLUMBUS.
DARNALL, WM. EDGAR . . . . . ATLANTIC CITY.
DAVIS, ASA B. . . . . NEW YORK.
DICE, WM. GORDON . . . . . TOLEDO.
DICKINSON, GORDON K . . . . . JERSEY CITY.
DORSETT, WALTER B. . . . . ST. LOUIS.
FINDLEY, PALMER . . . . . OMAHA.
FRANK, LOUIS . . . . . LOUISVILLE.
FURNISS, H. D. . . . . NEW YORK.
GOLDSPOHN, ALBERT . . . . . CHICAGO.
GOODMAN, SYLVESTER . . . . . COLUMBUS.
HALL, RUFUS B. . . . . CINCINNATI.
HAYD, HERMAN EMIL . . . . . BUFFALO.
HEDGES, ELLIS W . . . . . PLAINFIELD, N. J.
HOTALING, A. S. . . . . SYRACUSE.
HUGGINS, RALEIGH R. . . . . PITTSBURG.
HUMISTON, WM. H. . . . . CLEVELAND.
ILL, CHARLES L. . . . . NEWARK.
ILL, EDWARD J. . . . . NEWARK.
JACOBSON, JULIUS H. . . . . TOLEDO.
JENKS, NATHAN . . . . . DETROIT.

JONES, ARTHUR T.	Providence.
KEEFE, JOHN W.	Providence.
KING, JAMES E.	Buffalo.
LANGFITT, WM. S.	Pittsburg.
LONGYEAR, HOWARD W.	Detroit.
LOTHROP, EARL P.	Buffalo.
LOTT, HENRY S.	Winston, N. C.
MARVEL, HENRY	Atlantic City.
MILLER, AARON B.	Syracuse.
MILLER, JOHN D.	Cincinnati.
MOOTS, CHARLES W.	Toledo.
NOBLE, THOMAS B.	Indianapolis.
PANTZER, HUGO OTTO	Indianapolis.
PORTER, MILES F.	Fort Wayne.
POUCHER, JOHN WILSON	Poughkeepsie.
REDER, FRANCIS	St. Louis, Mo.
REED, CHARLES A. L.	Cincinnati.
ROSENTHAL, MAURICE I.	Ft. Wayne, Ind.
SADLIER, JAMES E.	Poughkeepsie, N. Y.
SANES, K. ISADORE	Pittsburg.
SCHWARZ, HENRY	St. Louis.
SCOTT, N. STONE	Cleveland.
SKEEL, A. J.	Cleveland.
SKEEL, R. E.	Cleveland.
SMEAD, LEWIS F.	Toledo.
SMITH, CHARLES N.	Toledo.
STAMM, MARTIN	Fremont, O.
STILLWAGEN, CHARLES A.	Pittsburg.
SWERINGEN, BUD VAN	Ft. Wayne, Ind.
SWOPE, LORENZO W.	Pittsburg.
TATE, MAGNUS A.	Cincinnati.
VANCE, AP MORGAN	Louisville.
VANDER VEER, ALBERT	Albany.
WEISS, EDWARD A.	Pittsburg.
WERDER, X. O.	Pittsburg.
YATES, H. WELLINGTON	Detroit.
ZIEGLER, CHARLES E.	Pittsburg.
ZINKE, E. GUSTAV	Cincinnati.

Total, 70.

The following-named registered guests were extended the privileges of the floor and invited to participate in the discussions:

Acker, Wm. F.	Monroe, Mich.
Allen, Wm. Dewey	Albany, N. Y.
Babione, A. A.	Luckey, Ohio.
Betts, Chas.	Toledo, O.
Bishop, Parker S.	Delta, O.
Booth, G. B.	Toledo, O.
Bowers, L. G.	Dayton, O.
Bowers, M. H.	Perrysburg, O.
Burger, Clarence A.	Toledo, O.
Burgess, Thos. E.	Toledo, O.
Chapman, Geo. L.	Toledo, O.
Coleman, James A.	Toledo, O.
Collier, Ernest M.	Pemberville, O.
Cook, J. M. C.	Weston, O.
Cullen, James G.	Toledo, O.
Daniells,	Toledo, O.
Donnelly, Peter.	Toledo, O.
Duncan, James A.	Toledo, O.
Duncan, James Todd	Toledo, O.
Fisher, W. H.	Toledo, O.
Fletcher, Fred.	Columbus, O.
Foster, S. D.	Toledo, O.
Fox, J. F.	Toledo, O.
Gardiner, John	Toledo, O.
Gibbon, Harmon B.	Tiffin, O.
Halbert, V. B.	Sylvania, O.
Harpster, Chas. M.	Toledo, O.
Heffron, Chas. N.	Metamora, O.
Hirschman, Louis J.	Detroit, Mich.
Hitchcock, C. S	Toledo, O.
Hogue, W. L.	Montpelier, O.
Howe, John D.	Tiffin, O.
Hubbard, Thomas	Toledo, O.
Imoberstag, C. O.	Toledo, O.
Keller, John G.	Toledo, O.
Kirkley, C. A.	Toledo, O.
Kloppenstein, Frank L.	Toledo, O.
Levison, Louis A.	Toledo, O.
Long, W. Hamilton	Louisville, Ky.
McKesson, Elmer I.	Toledo, O.
McNierney, Frank B.	Toledo, O.
Miller, C. S.	Toledo, O.

Miller, Louis	Toledo, O.
Morgan, J. J.	Toledo, O.
Mosely, Wm. E.	Toledo, O.
Murbach, Clarence F.	Portland, Ore.
Murbach, Edward A.	Archbold, O.
Parmelee, Myron H.	Toledo, O.
Price, C. E.	Toledo, O.
Quain, E. P.	Bismarck, N. D.
Reynolds, J. J.	Defiance, O.
Rheinfrank, Wm. H.	Perrysburg, O.
Selby, C. D.	Toledo, O.
Smead, H. E.	Toledo, O.
Smith, Anna G.	Toledo, O.
Spalding, I. L.	Hudson, Mich.
Spurney, Alfred F.	Cleveland, O.
Tenney, Chas. F.	Toledo, O.
Todd, George M.	Toledo, O.
Ury, John B.	Defiance, O.
Van Pelt, C. L.	Toledo, O.
Weitz, J. A.	Montpelier, O.
Williard, Geo. W.	Tiffin, O.
Winn, Geo. E.	Defiance, O.

Total 64

First Day—*Tuesday, September* 17, 1912.

Morning Session.—The Association met in the Assembly Room of the Secor Hotel at 9:30 A. M., and was called to order by the President, Dr. X. O. Werder, Pittsburgh, who introduced the Hon. Brand Whitlock, Mayor of Toledo.

Mr. Whitlock delivered the following

ADDRESS OF WELCOME.

Mr. President and Members of the American Association of Obstetricians and Gynecologists: I came here this morning to say a word of welcome to you in behalf of the city of Toledo. Perhaps this is superfluous, since those of your confrères in the city have already made you feel at home here. But I do wish to give you the best assurance on my part that this is something more than a mere official formality. In the course of my duties I have frequently to welcome people to this city, conventions and

gatherings of all kinds, but it is to me a special pleasure to welcome the members of this Association and to be able to extend a word of welcome to you and to your guests, and for the reason that you belong to a profession which I consider the most important in the world; a profession which is making progress along the only lines that progress can be made in this age, the only profession I think which carries on its work in a pure scientific spirit. I happen to belong to the profession of the law myself, and you know we have not made any progress whatever in the last two or three hundred years. We keep our faces set toward the past. Your faces are set toward the future. You have abandoned the dogmatic no, and you have come to that point in intellectual development when you accept the spirit of truth, and instead of saying "We know" you say "We do not know," but we are determined to find out and follow the truth wherever it may lead us. I think in that respect your profession leads the world to-day, and I feel that away down deep in the principles underlying the studies which you follow are to be found perhaps the solution of practically all of the problems that confront the world to-day. I speak of these topics with some hesitation before such a distinguished gathering as this, before such a gathering of such learned men as you are; but I have done a good deal of speculating in my time, a good deal of foolish speculating perhaps, and I have spoiled a good deal of white paper in writing down some of my speculations; but the more I think and follow these processes, the more I am convinced that away down deep in biology is to be discovered the final secrets and the truths that are to lead us out of the difficulties with which we are confronted to-day. But your profession is the only honest and earnest one which will enable us to do that. For that reason I am glad to meet you and to assure you that you are welcome to Toledo.

There is another thing about the medical profession that has impressed me very deeply, and that is that you doctors are doing a good deal toward driving yourselves out of business altogether, on account of instructing the public how to care for themselves, how to prevent disease rather than to cure it after it has developed. Of course, in your particular specialty I presume that possibility is entirely out of the question. However, you know more about that than I do. I presume that as long as life exists, your particular branch ofthe medical profession will continue to have a great deal of work to do. Let me say to you, therefore,

that I am very glad that you have honored Toledo by coming here. I wish I had some means of letting all the people know just what a signal honor it is to our city to have such a body of men meet here. I wish they could know what your high standing is in the realms of intellectuality in this country and in the world. It is to me a great pleasure to welcome you here, and I trust your meetings will be in every way successful and that you will go away feeling that you have enjoyed your stay here, and I want you to go away feeling assured that you have done us a great deal of good by coming here. I thank you for coming. (Loud applause.)

ADDRESS OF WELCOME BY DR. CHARLES MOOTS, TOLEDO.

Mr. President and Fellows of the American Association of Obstetricians and Gynecologists: Conceived at Buffalo, April 19, 1888; born at Washington, September, 1888, never to die while the world lasts, your organization has honored our local profession in selecting Toledo for the place in which to celebrate its Silver Anniversary.

Passing a rather stormy infantile period, the youngster approached the childhood age with wonderful prospects because each of its integral parts was inspired with the feeling that,

> "No great reform was ever won,
> By those who many battles shun;
> Nor comes reward to those too quick,
> To drop their arms when fighting's thick."

During the sensitive adolescent and the more stable early adult periods, you have rendered valuable assistance in the settlement of many important questions.

> "Not always right in all men's eyes,
> But faithful to the light within."

The most profound critic is unable to estimate the value of your work along the line of the successful cleaning up of pus in the pelvis. The forcible presentation of this subject, together with the masterly discussions which have followed, has developed such a clear understanding of the etiology and pathology of this condition that rational treatment is the natural consequence.

Much can always be said in praise of your wonderful symposium of papers which aided so materially in clearing the misty

viewpoint which has previously existed relative to the subject of ectopic pregnancy. In fact, your organization has had much to do with the rapid advances made in all gynecological and obstetrical disorders. No wonder, is it then, that the profession in Toledo feel honored that you have chosen to visit them at this, your Silver Anniversary. Never have I been called upon to represent our Association in any manner that gave me so much pleasure.

"You'll believe me, dear boys, 'tis a pleasure to rise,
With a welcome like this for your darling old eyes."

So in behalf of the Academy of Medicine of Toledo, I bid you welcome to our city, to our homes, and to all that is ours.

"Every heart has opened, every hand
Tingles with the welcome, and thru all the land,
All voices greet you in one broad acclaim.
Healers of ills! Has earth a nobler name?
Words grope and stumble; this will tell their tale
Shorn of all rhetoric, bare of all pretense,
But radiant, warm, with Nature's eloquence.
Look in our eyes! Your welcome waits you there,
North, South, East, West, from all and everywhere."

RESPONSE TO THE ADDRESSES OF WELCOME, BY DR. MAGNUS A. TATE, CINCINNATI.

Mr. Whitlock, Dr. Moots,

Mr. President, and Fellows of the American Association of Obstetricians and Gynecologists: On behalf of the Association I accept your very kind welcome and good wishes with much pleasure. We know only too well from past experience that we will be royally entertained, and that the key of your city is in our keeping.

This Society of Fellows comes to your city to work and to gain experience, and each meeting brings us in closer relationship. New members are shown what we do, how we work, and what we expect of them. We are already pleased at our wisdom in selecting Toledo as a meeting place. We come from many sections of the United States seeking knowledge. To gather my meaning, glance around this room, see the earnest faces

gathered here, and look at those men who have worked long and hard, who have made this Association's name a byword for the best that is in our country and second to none elsewhere. We are here for personal benefit, so that we can go home and give this knowledge gained to others.

The aim of the physician is to teach, to see that people get the good things that the Lord has placed in our paths; in other words, to receive the salutary effects of fresh air, clear clean water, decent politics and proper means of living. What nobler calling can be vouchsafed than to teach man and woman how to live better and cleaner lives? So I take it, the fundamental principle embodied in our art is to teach people how to live, so that they can keep away from the many ills that flesh is said to be heir to, and second to try and increase our knowledge and improve our technic, whereby we can cure when the opportunity arises.

Such stimulating meetings as we have, where men who know whereof they speak, cross swords, is bound to give us much to think over. Every meeting I attend increases my respect for this Association. We have had Price who taught us much of appendicitis, of how and when to drain. We have now a member who has saved thousands of lives by teaching us how to use the salt solution; another who taught us how to save patients from horrible bleeding by first ligating the vessel on the opposite side before removing a pelvic growth; another whose name has reached into far lands by his experimental work on shock, and that prince of men, who enlightens us yearly with his experimental results, and if time allowed I could enumerate many deeds accomplished by our members, far greater in value than the gaining of victory on the field of battle.

Points in technic are constantly brought out every year that we take home with us. One of your distinguished men of Toledo only last year described a simple method of protecting the field of operation in gall-bladder work. These are only samples of what this Association is doing.

Our discussions are sometimes lively; opinions are given straight from the shoulder, and yet I know of no Association of Fellows where there exists that common bond of brotherhood, and so we come here ready for new conquests, to receive what this Association and you of Toledo will give us, and when we depart I am sure all will say "I am glad to come and leave with a God bless you all until we meet again." (Applause.)

ANNOUNCEMENTS.

Dr. Charles N. Smith, Toledo, Chairman of the Local Committee of Arrangements, stated that practically all arrangements for the meeting were announced in the Official Program, but there were a few things to which he desired to call attention. A luncheon will be given to-day (Tuesday) in the Gold Room for Fellows only by the Fellows of Toledo. Tomorrow (Wednesday) at 1 o'clock there will be a luncheon for Fellows and guests, given by the medical profession of Toledo, in the Gold Room. In the evening at 7:30 the annual dinner of the Association will be given.

Dr. William G. Dice announced the arrangements that had been made for entertaining the wives of the visiting Fellows.

Papers were then read as follows:

1. "Cesarean Section; Points of Interest in a Series of Seven Cases," by Dr. John Norval Bell, Detroit, Michigan.

2. "Cesarean Section; Technic of the High Median Operation; Summary of Cases," by Dr. Asa B. Davis, New York City.

3. "Cesarean Section in a Double Uterus and Double Vagina," by Dr. N. Stone Scott, Cleveland, Ohio.

4. "A Case of Acute Dilatation of the Stomach following Cesarean Section," by Dr. Asa B. Davis, New York City.

5. "Acute Dilatation of the Stomach following Cesarean Section; Report of a Case," by Dr. Chas. E. Ziegler, Pittsburgh, Pennsylvania.

These papers were discussed together by Drs. Hayd, Reder, Goodman, Humiston, Bainbridge, Hotaling, Pantzer, Hall, Huggins, Zinke, and discussion closed by Drs. Bell, Davis and Ziegler.

6. "The Mechanism and Treatment of Placenta Previa," by Dr. Henry Schwarz, St. Louis, Missouri.

This paper was discussed by Drs. Zinke, Porter, Bell, Tate, Barrett, Bonifield and in closing by the essayist.

7. "Rapid Dilatation and Accouchement Forcé," by Dr. Henry S. Lott, Winston-Salem, N. C.

Discussed by Drs. Hall, Davis, Jacobson, Bandler, and in closing by the author of the paper.

On motion of Dr. Louis Frank, the papers of Drs. Palmer Findley and K. Isadore Sanes were postponed until the afternoon session.

On motion, the Association took a recess until 2:30 P. M.

Afternoon Session, 2:30 o'clock.

The President in the Chair.

8. "Puerperal Thrombophlebitis," by Dr. Palmer Findley, Omaha, Nebraska.

9. "Review of the Literature on Thrombophlebitis," by Dr. K. Isadore Sanes, Pittsburgh, Pennsylvania.

These two papers were discussed jointly by Dr. Huggins.

10. "Some Observations on Ectopic Gestation, with Presentation of Earliest Recorded Tubal Ovum," by Dr. Samuel W. Bandler, New York City.

11. "Pregnancy Simulating Extrauterine Fetation," by Dr. Henry J. Carstens, Detroit, Michigan.

These two papers were discussed together by Drs. Goodman, Dickinson, Sanes, Barrett, and the discussion closed by Drs. Bandler and Carstens.

12. "Teratoma of the Ovary, with Exhibition of Specimen," by Dr. Charles A. Stillwagen, Pittsburgh.

13. "Notes on Injuries to the Pelvic Floor Resulting from Labor," by Dr. Frederick Blume, Pittsburgh.

These two papers were discussed jointly by Drs. Marvel, Carstens, Humiston, Ill, Dickinson, Skeel, Pantzer, Carstens and discussion closed by the authors of the papers.

14. "The Complete Absence of Milk in the Primipara," by Dr. Francis Reder, St. Louis, Missouri.

Discussed by Dr. Pantzer and in closing by the essayist.

15. "Some Ethical Aspects of Feticide," by Dr. Edward A. Weiss, Pittsburgh.

This paper was discussed by Drs. Skeel, Ill, Carstens, Porter, Bell, Bonifield, Hotaling, Dickinson, Tate, and Hall.

16. "Report on Four Cases out of the Ordinary," by Dr. Ap Morgan Vance, Louisville, Kentucky.

Discussed by Drs. Hayd, Jacobson, and in closing by the essayist.

On motion, the Association then took a recess until 7:30 P. M.

Evening Session, 7:30 o'clock.

The First Vice-president, Dr. Louis Frank, in the Chair.

17. "The President's Address," by Dr. X. O. Werder, Pittsburgh.

Dr. Charles N. Smith introduced Dr. Samuel S. Thorn, of Toledo, as one of the war horses in medicine, and who, he said,

had been practising surgery for fifty-eight years in northwestern Ohio and Toledo.

Dr. Thorn thanked the Fellows of the Association for the pleasure it gave him to attend the meetings and to listen to the papers and discussions.

18. "Some Complications of Uterine Fibroids Demanding Early Diagnosis and Immediate Operation, "by Dr. J. E. Sadlier, Poughkeepsie, New York.

19. "Some of the Reasons for Advising Early Operations for Fibroid Tumors of the Uterus, "by Dr. Rufus B. Hall, Cincinnati, Ohio.

These two papers were discussed together by Drs. Hayd, Ill, and the discussion was closed by Dr. Hall.

20. "Potential Cancer of the Breast," by Dr. Miles F. Porter, Ft. Wayne, Indiana.

Discussed by Dr. Bainbridge and in closing by the author of the paper.

21. "Selection of Anesthetic for Abdominal and Pelvic Surgery," by Dr. Roland E. Skeel, Cleveland, Ohio.

Discussed by Drs. Maxson, Humiston, Bainbridge, Dickinson, and in closing by Dr. Skeel.

22. "Diagnosis and Operative Treatment of Diseases of the Genitalia in the Female Insane," by Wirkl. Geh.-Rat Prof. B. S. Schultze, Jena, which was read by Dr. Zinke in the absence of the author.

23. "Conservative Operation on the Ovaries; Report of a Number of Pregnancies Following," by Dr. William H. Humiston, Cleveland.

This paper was discussed by Drs. Goldspohn, Reder, Sanes, Pantzer and in closing by Dr. Humiston.

On motion, the Association took a recess until 9:30 A. M., Wednesday.

SECOND DAY—*September* 18, 1912.

Morning Session.—The Association met at 9:30 A. M., and was called to order by the Second Vice-president, Dr. Magnus A. Tate.

24. "Further Experiences with the Gilliam Operation for Suspension of the Uterus," by Dr. Edward J. Ill, Newark, N. J.

25. "A New Surgical Procedure for Retrodisplacement of the Uterus," by Dr. Samuel H. Buteau, Oakland, California.

These two papers were discussed by Drs. Goldspohn, Hall,

Carstens, Hayd, Skeel, Reder, Longyear, Kling, Vander Veer, Humiston, and the discussion closed by Drs. Ill and Buteau.

26. "Some Diagnostic Pitfalls in Abdominal Surgery," by Dr. Ellis W. Hedges, Plainfield, New Jersey.

Discussed by Drs. Carstens, Darnell, Bainbridge, Pantzer, Goodman, Porter, Reder, and in closing by the author of the paper.

27. "How Does Celiotomy Influence the Cure of Tubercular Peritonitis?" by Dr. Hugo O. Pantzer, Indianapolis, Indiana.

28. "Ureteral Injuries," by Dr. Herman E. Hayd, Buffalo.

Discussed by Drs. Goldspohn, Noble, Frank, Brown, Hall, Longyear, Carstens, Furniss, Ill, Baldwin, Werder, Vander Veer, and discussion closed by Dr. Hayd.

29. "Large Calcareous Fibroid with Complete Absence of Ovaries and Uterine Ligaments," by Dr. J. Wilson Poucher, Poughkeepsie, New York.

On motion, the Association took a recess until 2:30 P. M.

Afternoon Session, 2:30 *o'clock.*

The President in the Chair.

30. "Metrorrhagia Due to Atheroma of the Uterine Vessels," by Dr. Arthur Thos. Jones, Providence, Rhode Island.

This paper was discussed by Drs. Reed, Pantzer, Humiston and in closing by Dr. Jones.

31. "Indications and Technic in Operations on the Stomach," by Dr. George W. Crile, Cleveland.

32. "Stenosis of the Pylorus in Infancy," by Dr. John W. Keefe, Providence, Rhode Island.

These two papers were discussed together by Drs. Longyear, Carstens, Reder, Goldspohn, Noble, and the discussion closed by Drs. Crile and Keefe.

33. "Ileosigmoidostomy for Colonic Stasis," by Dr. Charles L. Bonifield, Cincinnati.

34. "A case of Uterus Septus with Hyperemesis Gravidarum; Interruption of Pregnancy at Three and One-half Months, followed by Peritonitis," by Dr. H. Wellington Yates, Detroit, Michigan.

35. "A Study of the Levator Ani Muscle in Relation to the Cure of Vaginal Hernia," by Dr. Channing W. Barrett, Chicago.

These papers were discussed by Drs. Dorsett, Goldspohn, Carstens, Reder, and in closing by the essayist.

At this time, the paper of Dr. Bonifield was discussed by

Drs. Brown, Reder, and the discussion closed by the author of the paper.

36. "Why Incidental Prophylactic Removal of the Vermiform Appendix, when Reasonably Possible, should be the Rule," by Dr. Albert Goldspohn, Chicago.

37. "Chronic Appendicitis," by Dr. Julius H. Jacobson, Toledo, Ohio.

These two papers were discussed by Drs. Bainbridge, Lott, Frank, Zinke, Noble, and in closing by Dr. Goldspohn.

On motion, the Association took a recess until 9 A. M., Thursday.

THIRD DAY—*September* 19, 1912.

Morning Session.—The Association met at 9 A. M., and was called to order by the President.

38. "Cysts of the Omentum with Report of a Case," by Louis Frank, Louisville.

39. "Case of Floating Spleen with Twisted Pedicle; Celiotomy, Splenectomy; Recovery," by Dr. Henry S. Lott, Winston-Salem, N. C.

Discussed by Drs. Frank, Dorsett, Noble, Yates, and in closing by Dr. Lott.

40. "A Good Way to Treat Femoral Hernia," by Dr. Thomas B. Noble, Indianapolis, Indiana.

Discussed by Drs. Barrett, Goldspohn, Dorsett, Porter, and discussion closed by the essayist.

Dr. A. B. Miller, Syracuse, moved that a vote of thanks be extended to the officers of the Association for the able manner in which the meetings had been conducted.

Motion seconded and carried.

Dr. Channing W. Barrett, Chicago, moved that a vote of thanks be extended to the Local Committee of Arrangements for the splendid manner in which they had made provision for the meeting; to the Toledo hotel and others who had served the Association so well.

Motion seconded and carried.

The President appointed Dr. Albert Goldspohn and Dr. Francis Reder as a committee to escort the newly elected president to the platform.

Dr. Werder, the retiring president, stated that his successor did not need any introduction to the Fellows.

Dr. Porter, in accepting the presidency, said: Mr President and Fellows: This is not the time for a speech. We have

worked hard and we are ready to go home. You know what I said yesterday, and most of you know, because you know me very well, how thoroughly I appreciate this great honor, the greatest honor that I have ever had conferred upon me. I appreciate it, and I propose to try to show my appreciation through my enterprise for the success of not only our next meeting, but for the continued success of the Association during the existence of this generation, and I hope that my efforts may have something to do with perpetuating it through many, many generations yet to come. But I want to say to you, gentlemen, that while the President is the head nominally of an institution of this kind, the brains and the work must emanate not from the head of the institution, but from its secretary. The office I hold as compared with the office of the Secretary of this and other societies is an unfair proposition, with everything in favor of the president. To him is given ordinarily the honor, but the fact of the business is that it belongs to the secretary. The secretaries of our societies, medical and otherwise, have more to do with their success than the presidents of them. Next to the secretaries work, and perhaps more important still than his work, is the importance of the work that each individual member does for this Association, and that after all is the key to success. You are all good workers, and I am sure will help Dr. Zinke and I to continue to build and add to the superstructure of which, we all feel, we have laid the foundation sufficiently broad and deep to hold whatever it seems well to erect upon it in the future. I thank you. (Loud applause.)

Dr. Werder.—I am pleased to turn over the office to such an able successor. (Applause.)

Drs. Goldspohn and Reder escorted the Vice-presidents, Drs. James E Sadlier, and Dr. Chas. N. Smith, to the platform.

Brief, felicitous speeches were made by the newly elected Vice-presidents.

Dr. A. B. Miller, Syracuse, moved that the time for holding the next annual meeting of the Association at Providence, Rhode Island, be left to and fixed by the Executive Council.

Motion seconded and carried.

As there was no further business to come before the meeting, on motion the Association then adjourned to meet in Providence, Rhode Island, subject to the decision of the Executive Council as to time.

E. Gustave Zinke, M. D., *Secretary.*

EXECUTIVE SESSIONS.

Tuesday, September 17, 1912.

The President in the Chair.

THE SECRETARY.—The Executive Council has acted favorably upon the applications of the following gentlemen and recommend their election: Drs. Arthur Julius Skeel, Cleveland, Ohio; Henry D. Furniss, New York City; Wm. Edgar Darnall, Atlantic City, New Jersey; Budd Van Sweringen, Ft. Wayne, Indiana; A. S. Hotaling, Syracuse, New York; Andre Crotti, Columbus, Ohio; Sylvester J. Goodman, Columbus, Ohio; Geo. Van Amber Brown, Detroit, Michigan; and Henry E. Tuley, Louisville, Kentucky.

THE PRESIDENT.—What are the wishes of the Association in regard to these applications?

DR. HERMAN E. HAYD.—I move that the rules be suspended, and that the secretary cast a ballot of the Association for the election of these gentlemen to Fellowship.

Motion seconded and carried.

Accordingly, the secretary cast a ballot and they were declared duly elected.

THE SECRETARY.—The next thing in order is the resignation of Dr. Ramon Guiteras, of New York.

THE PRESIDENT.—What will you do with this resignation?

DR. ASA B. DAVIS.—I move that the resignation be accepted.

DR. HAYD.—I second the motion. Carried.

THE PRESIDENT.—We will now listen to the report of the Treasurer.

DR. HERMAN E. HAYD.—The Association is in a splendid condition and, for the first time in a great many years, we have been able to pay all our debts. We have no obligation that has not been paid. We have a small balance in the Treasury. The only thing to do now is to appoint an Auditing Committee to audit the accounts of the treasurer. I might add to what I have already said, that we have not been able heretofore to publish our transactions but a short time before the succeeding meeting and to pay our bills from the money we had in hand, but we anticipate the payment of this volume by our present annual dues. In this case we have been able to pay all of our bills, and after paying for the next volume of transactions we will probably have one or two hundred dollars in the Treasury, so that the financial condition of our association is most encouraging.

Our Secretary has succeeded in making an arrangement with the publishers of our transactions, William Wood & Co., of New York, to publish our papers and discussions in the future for nothing, so that all the Association will have to pay for is the binding of the volumes, etc. In that respect the association will be saving from $600 to $800, according to the size of the volume.

THE PRESIDENT.—I will appoint as a committee to audit the books of the treasurer, Drs. Hugo O. Pantzer and A. B. Miller.

THE SECRETARY.—The final business to be brought before this Executive Session is in regard to what shall be done with those members who are delinquent in the payment of their dues. There are about six or seven members who have not met their obligations, and the amounts they owe vary from forty dollars to one hundred dollars each, making a total of approximately $440.00 due the Association from them. Some action was taken with regard to this matter two years ago, which was to the effect that if a fellow owed the association dues for more than two years he was to be dropped from the list of Fellowship. I would suggest that these gentlemen be communicated with first, advised of their delinquency, and then, if they do not pay any attention to it, their names should be stricken from the roll of membership.

DR. A. B. MILLER.—I think our by-laws provide for emergencies of this character, and it is not for us to take any action unless we rescind the by-laws of the association. I do not move, but I would simply suggest that this matter be left to our secretary, and that it be carried out according to the constitution and by-laws of the association. I think it would be courteous to communicate with these gentlemen again, but really it is not necessary, and if they are not sufficiently anxious to settle their indebtedness to the association, it would indicate they are not desirous of being continued as active members.

THE PRESIDENT.—It is understood, then, that this matter is to be left in the hands of the secretary.

On motion, the Executive Session then adjourned.

Wednesday, September 18, 1912.

The President in the Chair.

THE PRESIDENT.—We will listen to a report from the Auditing Committee.

DR. HUGO O. PANTZER.—We, your Auditing Committee, beg leave to report that we have examined the books and accounts of the Treasurer and find them correct.

Signed, A. B. Miller, Hugo O. Pantzer.

THE PRESIDENT.—What will you do with this report?

DR. BONIFIELD.—I move the report be accepted and the committee discharged.

Motion seconded and carried.

THE PRESIDENT.—The next thing in order is the selection of a place for the next meeting.

DR. JOHN W. KEEFE extended the Association an invitation to hold its next meeting in Providence, Rhode Island.

DR. BONIFIELD.—I move that the next meeting of the Association be held in Providence.

DR. HENRY SCHWARZ.—I second the motion.

After discussion, which was participated in by Drs. Carstens, Zinke, Frank, Hall, Buteau, Bonifield, Dickinson, the motion was put and carried, and, accordingly, Providence was declared to be the next place of meeting.

The nomination and election of officers was proceeded with and resulted as follows: President, Dr. Miles F. Porter, Ft. Wayne, Indiana; First Vice-president, Dr. Chas. N. Smith, Toledo, Ohio; Second Vice-president, Dr. Jas. E. Sadlier, Poughkeepsie, New York; Secretary, Dr. E. Gustave Zinke, Cincinnati, Ohio, reelected; Treasurer, Dr. Herman E. Hayd, Buffalo, New York, reelected; Members of the Executive Council, Dr. John W. Keefe, Providence, Rhode Island, and Dr. X. O. Werder, Pittsburgh, Pennsylvania.

THE PRESIDENT.—Is there any other business to come before the Association?

DR. LOUIS FRANK.—I desire to offer the following amendment to the by-laws and move its adoption:

"Any member of this Association, who fails to attend for five consecutive meetings, shall be dropped from membership." Seconded.

DR. WALTER B. DORSETT.—I move to amend by adding the words "unless he offers a satisfactory excuse in the judgment of the Executive Council."

The amendment was seconded, accepted, and the original motion with its amendment was put and carried.

THE PRESIDENT.—If there is no further business to come before the meeting, a motion to adjourn will be in order.

Dr. Magnus A. Tate.—I think it would be very nice to hear from the newly elected President.

Dr. Porter, the newly elected president, said: Mr. President and Members of the American Association of Obstetricians and Gynecologists: I feel a good deal like the old lady did at an Evangelistic meeting, at which they asked her for an expression, and she replied that she was "too full for utterance." (Laughter.) That is the way I feel now.

I have suffered at the hands of the medical profession from time to time a great many very kind things, but I think I can say never in my life has anything been thrust upon me in the way of an honor that I value more highly than I do that of being your President-elect. I believe, however, in deeds more than in words, and I hope that I shall prove that your confidence has not been misplaced. Gentlemen, I thank you for the distinguished honor that you have conferred upon me. (Applause.)

The President.—Is there any further business to come before the Association?

Dr. Bonifield.—I move that Dr. Keefe be made Chairman of the Committee of Arrangements for the next meeting.

Dr. Frank.—I second the motion. Carried.

The Executive Session then adjourned *sine die.*

E. Gustave Zinke, M.D., *Secretary.*

PAPERS

READ AT THE

TWENTY-FIFTH ANNUAL MEETING

OF THE

AMERICAN ASSOCIATION

OF

OBSTETRICIANS AND GYNECOLOGISTS

HELD AT

THE SECOR

TOLEDO, OHIO

SEPTEMBER 17, 18, AND 19, 1912

THE PRESIDENT'S ADDRESS.

BY

X. O. WERDER, M. D.,

Pittsburgh, Pa.

THE twenty-fifth Annual Meeting of the American Association of Obstetricians and Gynecologists is an occasion which should fill the heart of every Fellow with joy and pride. Organized at the Niagara Hotel in Buffalo, April 19, 1888, in the presence of fifteen gentlemen interested in abdominal surgery, obstetrics and gynecology, this Association entered the ranks of special societies with the object of closer cultivation, advancement and encouragement of the studies and practices of abdominal surgery, obstetrics and gynecology. Its first regular annual meeting was held in Washington, D. C., from September 18 to 20, 1888, under the presidency of Wm. H. Taylor of Cincinnati, its first president, with W. W. Potter of Buffalo as secretary. The latter, who retained his position until the time of his death, was, particularly in the earlier years of the Association, an enthusiastic and tireless worker in the interests of this Society which owes much of its present position and standing to his unceasing labors in its behalf. The Washington meeting was attended by twenty-six of its forty Fellows who were then enrolled in its list of membership and thirty papers were presented, not including a symposium on extrauterine pregnancy in which nine essayists participated.

The success of this meeting and the enthusiasm and interest displayed by all present was an auspicious beginning, and any doubt and uncertainty concerning the future and necessity of this Association was at once and forever dispelled from the minds of those present. We all returned from Washington with new zeal and the sanguine feeling that this Association was destined to take a prominent and important place among the special societies of the country and would accomplish a great amount of good in the field which it had chosen for its labors. A quarter of a century of its existence has not disappointed its organizers, but on the contrary has surpassed their keenest expectations.

It would be a mistake, however, to suppose that during all

these years this Association has had easy and clear sailing, with no turbulent waters to hamper its course and no disturbing elements in its path; on the contrary, enemies arose from many sides immediately after it had become launched, assailing it on all occasions and at times some within its own ranks, but they only served to make this body stronger and healthier and it emerged from all these attacks unharmed and more vigorous than ever before. To-day we have one of the most powerful and influential organizations of this character in existence, with a membership of 134 ordinary Fellows and a large list of honorary and corresponding Fellows, living in almost every section of the civilized globe.

Among these may be found many of the leading and most distinguished representatives of abdominal surgery, obstetrics and gynecology of the world. The work of this Association during the twenty-five years of its existence has very materially contributed to the wonderful development of these branches of medicine which at the time of its organization were practically in their infancy, at least that of abdominal surgery. The handsome twenty-four volumes of our transactions issued by this Association bear witness of the activity, industry and high quality of the work of its Fellows and may be considered the history and the yearly records of the progress and advances made in these branches of medical practice, so closely identified has this society become with the marvelous developments and growth of these departments during the last quarter of a century. While the charter members of this Association were the pioneers in these subjects at the time of the organization, they with the Fellows subsequently enrolled in its membership have to-day become the leaders and masters in them.

While we have every reason for congratulation and rejoicing at the work accomplished by this Association during the past quarter of a century, there must also a feeling of great sorrow and sadness creep into our hearts when we look back over these twenty-five years, at the thought of the missing ones. Not a few who started out with us in youthful enthusiasm and high ambitions and a promise of many years of useful activity and helpfulness among their fellow-men, have been taken away in the midst of their labors and are no longer in our midst. The yearly tribute to that grim reaper, Death, has been steadily growing and we miss to-day many kind, dear and familiar faces, who endeared themselves to us at our annual gatherings and who

enlivened our meetings by their presence, their humor and their active participations in the discussions. It is sad to think that we will meet them no more and that their voices will never sound again in our meeting rooms. Some of these are a distinct and irreparable loss to our society which will be felt for many years to come. We mourn the loss of thirty-eight members who have died during these twenty-five years. Of the fifteen gentlemen present at the organization of the society in Buffalo, only five survive as members.

The advances, more particularly in abdominal surgery and gynecology since the foundation of this society, have been truly phenomenal. At no period in the history of medicine, I am safe in saying, have such evolutions and growth—revolutionizing the entire practice of medicine—been experienced. This society has been singularly fortunate in having had its inauguration just at the eve of these remarkable changes, because it acted as an incentive for each individual Fellow to contribute his own share, large or small, in the development in these departments of medicine, and when the history of medicine covering the last twenty-five years is written, not a few Fellows will be credited with a large proportion of the work accomplished.

To realize and appreciate what has been accomplished in the last quarter of a century a brief retrospect of the status of abdominal surgery and gynecology just previous to that period should prove instructive and helpful, particularly to the younger members of this society. Not too much credit can be given to Sir Joseph Lister who by his discovery of wound infection and its prophylactic treatment made these advances possible. Its full value and importance were, however, very slow in being recognized by the profession, and its general adoption antedated the foundation of this society but a few years. Well do I remember seeing many operations performed by some of the best known surgeons in London, neighbors of Lister, in the year 1884, who apparently had never heard of Lister and his discovery. Speaking in a general way, we may mark the year 1880 as the beginning of the new era in surgery. Up to this time abdominal surgery was practically limited to ovariotomy, though in a few isolated cases, either through a mistake in diagnosis, or in the hands of an unusually bold and enterprising surgeon, other operations had been attempted and at times carried out with success.

Hysterectomies for fibroid had been performed not infre-

quently but with such a high mortality that there was little incentive for the ordinary surgeon to imitate. Until about the year 1883 such eminent operators as Schroeder, Martin, Tait and Bantock, the pioneers in this work, had a mortality of about 30 per cent. Keith was the first to improve these results and only a few years later the extraperitoneal treatment of the pedicle, by means of which the cervical stump was anchored and fixed in the lower angle of the incision, enclosed by a clamp, serre-neud, or an elastic ligature, had become so perfected that the results in the hands of the best surgeons became quite favorable. The intraperitoneal method, originated by Schroeder in 1882, proved exceedingly dangerous and found few advocates until Simpson of New York in 1889, demonstrated that by ligating the ovarian and uterine arteries the danger of hemorrhage from the stumps, hitherto the bug-bear of the intraperitoneal methods, could with absolute certainty be avoided. The present ideal method of suprapubic hysterectomy, the most beautiful and satisfactory operation in the range of abdominal surgery, we owe to Baer of Philadelphia, who first described it nearly twenty years ago. Until that time many surgeons preferred the removal of the uterine appendages as the far safer operation for bleeding fibroids, but the results were far from encouraging.

The unsatisfactory results of the operative treatment during these years of development, led to various attempts to relieve the unfortunate sufferers from uterine fibroids. Among these, electricity as applied according to Apostoli's method (of Paris), was for a number of years a subject of lively discussion in the medical circles, and for a time many enthusiasts claimed such remarkable results that every "up to date" gynecologist felt compelled to acquire the necessary and not inexpensive apparatus. Not only did the advocates of this method claim to relieve the symptoms accompanying this neoplasm, such as bleeding, pain, etc., completely and promptly, but they saw rapid shrinking of the tumor, and in the course of time complete absorbtion as a result of the electrolytical treatment. These illusions, however, soon disappeared, and with them the much heralded and for a time apparently promising electrical craze.

To the great genius and wonderful skill of Lawson Tait we are largely indebted for the epoch-making progress in abdominal surgery, beginning with or near the year 1880. He recognized the fact that pelvic inflammation usually has its origin in the

tubes, extending from there to the peritoneum. Up to this time practically all inflammatory conditions in the pelvis were regarded as a cellulitis, though Bernuitz and Gonpil in the year 1862 described very clearly the pathology of pelvic inflammation, and Noeggeroth in the year 1878 had pointed out its etiology in his classical little book on "Gonorrhea in the Female." It required, however, the actual demonstration on the operating table and the specimens of ovaries and tubes removed from the living subjects to convert the doubting profession and to revise their old and long-held views of pathology. Tait's results were so brilliant that he soon found pupils and imitators all over the world and the "Tait operation," which the removal of diseased ovaries and tubes was then called, came rapidly into vogue and was popular with the surgeons, to such an extent that it was greatly abused in many instances and threatened to discredit surgery for a time on that account. In 1883 Tait performed his first operation for extrauterine pregnancy with ruptured tube, and from that time on found many such cases among his material, showing thereby, that ectopic gestation was not the rare accident that it had hitherto been regarded, but a very common indication for surgery. His experience with this condition resulted in a complete change of views hitherto held concerning the pathology of extrauterine pregnancy. His operative skill was soon employed in other parts of the abdomen, especially about the gall-bladder and biliary ducts in which he, with Mayo Robson and Langenbach of Germany, was one of the pioneers.

In uterine displacements the pessary was the only means known to correct the malposition, until Alexander in 1882 conceived the idea of utilizing the round ligaments for that purpose by shortening them through the inguinal canal. He was soon followed by Olshausen and Kelly, who were the first to open the abdomen for the permanent correction of backward displacements of the uterus. This gave a great impetus to the surgical treatment of uterine prolapse, the plastic operations on the vagina, hitherto performed for the relief of this condition, proving insufficient without the reposition of the uterus into its normal anteposition. The plastic work had recently been much improved by such men as Hegar, Martin, and particularly Emmet, whose masterful skill in plastic surgery, based upon correct anatomical principles, brought about radical changes in the methods formerly in vogue and whose operations are performed even to-day by many of the leading surgeons with only

slight modifications. The fact is that in the enthusiasm for innovations and improvements in abdominal surgery, little attention was given to the minor operations about the vaginal outlet which for a time were sadly neglected until recent years revived the interest in that portion of the pelvic channel.

At the foundation of this Society a lively discussion was in progress regarding the proper treatment of cancer of the uterus. As early as 1878, Freund did a radical abdominal operation for uterine cancer which, however, was soon abandoned on account of the frightful mortality (72 per cent.) and vaginal hysterectomy came gradually into favor as a much safer substitute. Much bitter opposition, however, developed against this operation, especially by men advocating and practising amputation of the cervix by knife and cautery, on the grounds that the results did not justify such dangerous and mutilating operations. In the light of our present knowledge this opposition was not entirely out of place, as statistics have since shown better results and a larger percentage of cures in the hands of such men as Byrne of Brooklyn, Baker, Brown, and others, by their cautery operations performed without any loss of life, than has been obtained by the vaginal hysterectomy as performed at that time. Uterine extirpation per vaginam, at least in carcinoma of the cervix, as ordinarily performed, that is without a thorough removal of the disease focus in the vagina and parametrium, experience has demonstrated as being not much more than a mere palliative operation, and about on a par with the high amputation of the cervix practised at that time by Schroeder and Winter, the latter, however, having in its favor the absence of mortality.

Until the year 1886 when Fitz of Boston published his careful studies and investigations of appendicitis, we possessed very little definite knowledge of that condition. The inflammatory processes in the right iliac region were spoken of as a typhlitis and perityphlitis, and when more extensive, as peritonitis, and the operative treatment was of course confined to incising the abscesses in this region. Further investigation of this subject was now taken up by the surgeons who, from specimens and the information gained at the operating table, were soon able to formulate a definite pathology of the disease and indicate its rational and proper treatment. We owe to a very large extent the wonderful success in the management of this once justly dreaded affection to some members of this Association; Murphy, Deaver and Morris were unquestionably the prime and acknowl-

edged leaders to whose efforts and activities we are indebted for the rapid advances made in this particular field of surgery.

The postoperative conditions as well as the after-treatment of abdominal sections in the early days of the last quarter of a century, differed very considerably from those of the present time, and the easy, smooth convalescence, almost uniformly observed by the modern and skilled surgeon, was then rather the exception than the rule. The bug-bear was always infection and peritonitis, which in spite of the antiseptic methods then in use, were a common complication and the largest single factor contributing to the death rate. The reason of this may be explained by the fact that antisepsis was then the practice rather than asepsis, and that entirely too much reliance was placed in the germicidal action of the antiseptic drugs employed. Hand-disinfection is at best very difficult and unsatisfactory, and at that time not as well understood as at present, and what is still more important, the rubber glove, the great boon to aseptic surgery, which gives the surgeon absolute confidence in his ability to prevent infections, was unknown.

In addition to this, operations were then performed in acute inflammatory conditions of the pelvis during the greatest activity and virulence of the pathogenic organisms, when everything favored general infection and peritonitis. The free irrigation of the abdominal cavity with sterile water for the purpose of removing the debris and septic material, so generally practised with a view of preventing the dreaded infection, was illusory and harmful, as it had the effect of scattering septic organisms more extensively over the peritoneal cavity and thereby aiding and increasing the disease process. The glass drainage tube then considered indispensable in such cases, though when properly used was helpful and of great benefit, was insufficient and often powerless in checking the rapid invasion and toxic action of the liberated septic agents.

It is, therefore, not surprising that the mortality in this class of cases was very high and that those which recovered, often after a long, tedious and stormy convalescence, did so with complications of grave wound infections, sinuses, and not rarely fecal fistulæ. These results were, unfortunately, not always confined to the septic cases; they not rarely occurred in the clean and uncomplicated cases, and that in the hands often of the most careful and experienced men. It is no wonder then that the surgeon was constantly on the lookout for trouble of this char-

acter and ever ready with his precautions to forestall them by measures considered at that time highly important and very effective. Among these saline laxatives, especially sulphate of magnesia, occupied the most important place and was often administered as early as a few hours after operation, for the purpose of draining the bowels and the peritoneal cavity, thus aiding the elimination of the pathogenic organisms. Opiates in any form were shunned as poison, and their administration regarded little short of criminal, because they tended to mask the symptoms, especially those of peritonitis, and by interfering with peristalsis, locked up the intestinal secretions, thereby greatly lessening the patient's chances of recovery. Those of us who have not personally witnessed it, may at least imagine the suffering of these poor patients who were compelled to drink frequent nauseating doses of salts and who had to pass through this ordeal without any relief, as the surgeon standing at the bedside with a sad and troubled heart did not dare to jeopardize his patient's chances by a merciful dose of morphia. To what extremes the medical man has often wandered, groping his way in the darkness and what sacrifices he has been obliged to make before the much looked for light finally appeared! Not many years before that period, the Alonzo Clark treatment was in general use for peritonitis, which was the exact opposite of that described above. Cathartics were strictly forbidden and opium given in large doses to the point of tolerance, keeping the patient in a condition bordering on semicoma for days, because the rest treatment so successfully used in inflammations elsewhere was expected to accomplish the same good results in the peritoneal cavity. For that reason, complete body rest, with arrest of peristalsis was secured by these extreme doses of opium. At the present time we have arrived at a point about midway between these two extremes, verifying the old maxim "*In medio stat virtus.*"

Secondary hemorrhage also was a condition of not infrequent occurrence and gave the surgeon many anxious moments during the first twenty-four hours after operation. This was usually caused by a slipping ligature, which the surgeon at this early date had not learned to tie with the security which subsequent experiences gave him. These were sad and trying cases, because when the condition was recognized, relief often came too late. Deaths from hemorrhage were no doubt more common at that time than was generally admitted, because many of these

were attributed to shock which in the light of our present knowledge we would unhesitatingly recognize as caused by internal bleeding.

Among the most frequent postoperative complications may be mentioned incisional hernia which then occurred in a considerable percentage of the cases; 10 per cent. is probably not an exaggerated proportion. This was partly due to the frequent deep wound infections, the glass drainage tube and the gauze drain, especially the Miculicz drain which was then not rarely used in the pelvis. It also followed simple operations without infection on account of the careless closure of the abdominal incision which was then invariably closed by through-and-through sutures of silkworm gut; suturing the different layers of the abdominal wound is of more recent date. As a consequence faulty apposition and imperfect union, especially between the fascial layers, frequently resulted with subsequent separation and hernia formation.

Until twenty years ago silk was the only ligature and suturing material in general use in the abdomen. This became frequently infected, resulting in exudate and abscess formation in its immediate vicinity, forming the so-called "stump exudates" which gave rise to many annoying and troublesome symptoms, persisting for months, leaving the patient often in as bad if not worse condition than before operation, and requiring in many cases secondary operations for relief. The substitution of catgut for silk has done away almost entirely with this formerly very troublesome complication, so that our younger surgeons have been spared this very unpleasant experience.

Obstetrics has not experienced those revolutionary changes which marked the course of abdominal surgery and gynecology during the last twenty-five years. This may be attributed to the fact that when the evolution in these departments began, obstetrics was quite a well-developed art and science, considerably in advance of any other branch of medicine. As the leading obstetricians of this time were usually also active gynecologists, the new era brought so many new problems to be solved and worked out that their interests and labors were so entirely absorbed in this new work that obstetrics did not receive the attention this important subject demanded, at least during the earlier part of the period in question. It is not to be understood, however, that obstetrics was not benefited and influenced by the vast developments going on in the other allied depart-

ments; because the introduction of antisepsis alone was of vital importance, inasmuch as by it thousands of lives were saved annually. The not uncommon puerperal fever epidemics were stamped out entirely and for all time and not only was the mortality of the puerperal state greatly reduced, but also the morbidity lessened very materially. To the beginning of this period must also be credited Sanger's improved Cesarean section, and the revival of symphysiotomy. During recent years we have witnessed a decided and renewed interest in this so important branch of medicine during which surgical methods have been introduced for the treatment of many obstetrical complications which have taken the place of some of the old conservative methods, especially in eclampsia and placenta previa.

This brief retrospect covering only the most important features will suffice to give those not fully familiar with the situation in abdominal surgery and gynecology at the time of the foundation of this Society, a fairly clear idea of what has been achieved during the last twenty-five years. It will also, to a certain extent at least, picture to them the constant difficulties and anxieties attending the work of those pioneers who were compelled to rely upon their own resources, and whose daily labors were in a field in which neither the experience, advice or assistance from others were available. It was fortunate for the development of abdominal surgery in this country that at this early period, just a few years previous to the organization of this society, the late lamented Joseph Price began his remarkable career, and his clinic commenced to attract attention.

It soon became the Mecca to which the surgeons from every part of the Union flocked who, inspired by his enthusiasm and skill, took up the work in their various spheres with more confidence, adopting the simple and successful methods practised by this master of technic. There are few of our older surgeons living in the various States of the Union who at some time or another have not been pupils of Joseph Price, and who do not owe much of their early success to his personal instructions. Whatever opinion we may hold of his work in later years, we all must agree that in those days he was a master and a teacher without his equal, and to him abdominal surgeons, at least of this country, owe a debt of gratitude as to no one else.

That abdominal surgery and gynecology will continue on the path of development and progress during the next twenty-five years is certain, but that it will be accompanied by the revolu-

tionary changes experienced during the last quarter of a century is hardly to be expected. Changes of another character, however, may be looked for which may have important bearings on the profession at large and to which I take the privilege to allude very briefly.

Abdominal surgery and gynecology, formerly in the hands of a comparatively few men especially trained in these lines, are rapidly passing the point of specialism and are becoming to a large extent the property of the general practitioner, and in this lurks a danger which we must sooner or later face. It is a highly laudable ambition and one to be encouraged for every member of the profession, especially when starting in his chosen career, to equip himself to the full extent of his ability for the work of relieving suffering humanity in whatever form it may be met, and nobody should criticise the physician who wishes to extend his field of usefulness to any branch of medicine, provided he is fully competent to do so without detriment or injury to his patients. To do good surgery requires an amount of special training and should include an apprenticeship to some master in these surgical specialties, which is available to comparatively few, not to mention a natural aptitude and fitness, indispensable to the successful surgeon. Without these requirements and qualifications our surgical work must of necessity be unsatisfactory and inferior, and often dangerous if not fatal, and, moreover, operations performed without the slightest indication or necessity will be of not rare occurrence because diagnostic skill is even more difficult to acquire than technical ability. Uuless some restrictions can be drawn, and this surgical craze, rampant even now, checked, great harm will be done and surgery discredited. Such control seems just as important as that adopted by all states against illegal and unqualified practitioners and charlatans, or even as the precautions against adulteration of food-stuffs or drugs.

Another danger coincident with increased competition and our commercial age which threatens to dethrone from its high pinnacle of honor and dignity on which the medical profession has been placed from time immemorial and to undermine the public confidence so necessary in the performance of our duties, is commercialism, which in this connection is closely allied, if not synonymous with dishonesty. At present this is most conspicuous in the form of the so-called "fee-splitting," an abuse and a form of dishonesty which must sooner or later, unless

promptly checked, become generally known among the laity, when it will disgrace the profession and subject the honest men in it to public suspicion, just as much as the dishonest. Steps should be taken in the various medical societies to stamp and root out this evil which will soon be followed by other abuses and disgraceful actions, if we do not wish to see the name of our loved profession stained and besmirched and the self-sacrificing labors of the surgeon made more difficult and his honored position in the public, considerably lowered. The work of eradicating these dangers, which I am sure are not imaginary or visionary, but are in actual existence, and have already taken quite a serious aspect in many communities, must be faced at once and proper measures considered in the most influential medical societies for the elimination of all such elements so detrimental for the welfare and future usefulness of our great profession.

In conclusion, permit me to express to you my appreciation of the high honor conferred upon me in choosing me your presiding officer, especially for this year of our Silver Anniversary, which is one of great importance in the history of the Association. I am fully conscious of my failings and the lack of those qualifications so highly desired in a presiding officer, but as you elected me without my solicitation and even without my knowledge, it is only fair that you assume the responsibility for this act, and I can only ask you to be patient and indulgent with my shortcomings.

714 Jenkins Building.

CESAREAN SECTION.

(Points of Interest in a Series of Seven Cases.)

BY

JOHN NORVAL BELL, M. D.,

Detroit, Mich.

The comparatively large number of indications included in this small series of cases, and the hope that the discussion of the interesting points in each case will prove beneficial, is my excuse for presenting this short paper on an ever interesting subject.

Case I.—Mrs. B., Bohemian, age twenty-four, full term. Was called in September, 1907, to this case by the family physician, an exceptionally competent man, who had made repeated attempts at delivery with the Elliot forceps, but without success. The Tarnier forceps were then applied but these, too, proved ineffectual and the patient was transferred to Harper Hospital, abdominal Cesarean section performed, and a large male child delivered. During the puerperium the mother developed a slight fever, varying between 99° and 102° F., for about five days. Other than this, the recovery of both mother and child was uneventful.

The point of interest in this case is that the uterus was not removed at the time of operation, notwithstanding the fact that repeated attempts at delivery had been made before the patient was brought to the hospital. This, I am aware, is contrary to the teachings of many authorities on this subject, but it seems to the writer that, given the case of a young woman of good resistance who has been examined repeatedly by a careful physician, and has even been subjected to repeated attempts at delivery with the forceps, we are not justified in removing the uterus, and thus depriving her of the hope of future childbearing.

The pelvic measurements in this cases were as follows:

Interspinous	22.5 cm.
Intercristal	27.5 cm.
Intertrochanteric	30 cm.
Anteroposterior	17.5 cm.

CASE II.—Mrs. M., American, age thirty-seven.

Indications.—Justominor pelvis.

Diameters:

Interspinous	21.5 cm.
Intercristal	23.5 cm.
Intertrochanteric	27.5 cm.
Anteroposterior	17.5 cm.

The points of interest in this case are, the history and the excellent results attendant upon the adoption and carrying out of the modern approved method of treatment in these cases, namely, operation by election.

History.—First child several years ago; difficult instrumental delivery, two physicians in attendance; results, dead child and extensive lacerations.

Second child delivered by the writer. Difficult instrumental delivery, small female, baby living, and, I am glad to say, still alive after eight years.

Third Pregnancy.—Patient neglected to notify me of her condition until she was in labor. The child was large and the head would not engage satisfactorily. Called another physician and after repeated unsuccessful attempts at delivery performed podalic version and delivered the patient of a dead child. In other words, I sacrificed the child in trying to deliver it, instead of transferring the patient to a good hospital and delivering her by abdominal Cesarean section, as I would now do. I informed the patient that if she became pregnant again she must go to the hospital and submit to whatever form of delivery was deemed best. Within a year she again became pregnant and I had her removed to the Womans' Hospital and operated at the first onset of labor pains. Delivered her of a fine boy baby, both making uneventful recoveries.

CASE III.—Mrs. A., Bohemian, age thirty.

Indications.—Flat rachitic pelvis and prolapsed cord.

Diameters:

Interspinous	27.5 cm.
Intercristal	30 cm.
Anteroposterior	20 cm.

This patient presented quite a marked lordosis and had been delivered once before by abdominal Cesarean section. One would be led to surmise that a patient with so large a pelvis could be easily delivered, but the true state of affairs was revealed at

operation, when it was found that the promontory of the sacrum projected far out over the superior strait, thus preventing engagement of the head.

Another interesting point about this case was the fact that no scar could be found in the uterus following the former delivery.

This patient's husband took it upon himself to remove her from the hosiptal on the eighth day, and on visiting her at her home on the tenth day, found her attending to her household duties. The lesson taught by this case is that the external measurements are not always to be relied upon, especially where a lordosis is present.

CASE IV.—Mrs. M., age forty-two, multipara.

Indication.—Placenta previa centralis.

Saw this patient in January, 1910. She was then within two weeks of term and had been flowing quite profusely for two or three days, so much, indeed, that she was markedly anemic. The placenta was situated almost directly over the center of the cervical canal.

Fearing that an attempt at delivery by detaching the placenta would result in the death of the child, I suggested abdominal Cesarean section. The patient was very desirous of having a living child and readily consented to the operation, which was done as soon as she could be transferred to the hospital.

She made an apparently uneventful recovery, but on removing the abdominal dressing on the tenth day it was found that the abdominal incision had failed to unite, partly because of a mass of omentum which presented just beneath the skin, and partly, as I suppose, because of poor nourishment in the tissues of the abdominal wall. Removal of the omental mass, freshening of the margins of the incision and new suturing resulted in a complete recovery, and the mother is happy in the possession of a living child, which good result, I fear, might not have accrued had I adopted any other method of delivery.

Is placenta previa centralis an indication for abdominal Cesarean section? The writer is firmly convinced that it is, believing that the dangers attendant upon this operation are far overbalanced by perforation of the placenta turning and bringing down a leg, which is the routine procedure in these cases.

CASE V.—Mrs. B., primipara, age thirty.

Saw this patient in June, 1910, in consultation with her family physician, who, with a neighboring practitioner, had

made repeated attempts at delivery with the forceps, without success. On bimanual examination a large fibroid tumor occupying the lower uterine segment could readily be palpated. The patient was transferred to the hospital and delivered per abdominal Cesarean section of a dead child, which had evidently been sacrificed in the ill-advised attempts at delivery with the forceps. The fibroid was of the interstitial variety and occupied so much of the lower uterine segment that supravaginal hysterectomy was deemed advisable. This was done, and the patient made an uninterrupted recovery.

The question of the advisability of the removal of the uterus in such cases as this is one which I sincerely hope will not be overlooked in the discussion, as the writer has personal knowledge of the complete disappearance of such growths following pregnancy and parturition in at least two cases. The sad commentary on this case is that the child might have been saved by an early recognition of the condition and prompt abdominal Cesarean section.

Case VI.—Primipara, age thirty-seven.

Indications.—Fibroid tumor.

Married eleven years. Consulted me in November, 1910, pregnant four months. On bimanual examination a good-sized fibroid tumor could be palpated occupying the lower uterine segment, filling the pelvis to within an inch of the posterior aspect of the pubes. The growth was firm and immovable.

Thinking that possibly we had to deal with a pedunculated fibroid which might be dislodged later in the gestation, I advised the patient to report from time to time, which she did. At full term, however, no change could be made in the position of the growth, and the patient was advised to hold herself in readiness to enter the hospital for abdominal Cesarean section on the onset of labor pains.

At the end of ten days after the completion of term, no signs of labor having developed, I advised the patient to enter the hospital in the evening and be operated the following morning. This she consented to, and on seeing her that evening she remarked that she had not felt any fetal movements since morning. Careful stethoscopic examination revealed the fact that the child had died during the day.

At operation the following morning a condition very much like that in Case V was found, although the tumor did not involve quite so much of the uterine wall.

This couple was very anxious to have a child and I decided to leave the uterus, with the hope that the woman might be more fortunate at some future time. In early June of this year her husband informed me that she was again pregnant, having missed three periods. This, however, proved to be untrue, for on examination in my office, August 15, I was surprised to find not only that she was not pregnant at all, but that the fibroid tumor had entirely disappeared.

The queries which present themselves in this case are:

1. What caused the death of the child?
2. Why had the patient ceased menstruating?

CASE VII.—Mrs. S., primipara, age thirty.

Indications.—Justominor pelvis.

Diameters:

Interspinous	22.5 cm.
Intercristal	25 cm.
Intertrochanteric	28.5 cm.
Anteroposterior	17.5 cm.

Interest in this case centers in the fact that the patient did not develop labor pains for two weeks after term.

The Walcher position was not effectual, and abdominal Cesarean section was resorted to without any attempts at forceps delivery.

The results were ideal, both mother and child making perfect recoveries.

In conclusion the writer would strongly advocate a more frequent adoption of this operation and would include impacted face presentations among the indications.

506 WASHINGTON ARCADE.

CESAREAN SECTION. TECHNIC OF THE OPERATION BY THE SMALL MEDIAN INCISION ABOVE THE UMBILICUS, WITH A SUMMARY OF CASES.

BY

ASA B. DAVIS, M. D.,

New York City.

In reviewing the present-day abdominal Cesarean section, several considerations impress themselves upon our attention. We note the large and rapidly increasing number of these operations which are being performed by many different surgeons. The results which they are able to report are cause for congratulation. Despite the broader scope and the greatly increased number of pathological conditions complicating labor which are now considered indications for the performance of this operation, the maternal mortality has been reduced in a comparatively few years from one which was almost prohibitive, until at the present time it is the concensus of opinion of most operators and writers that not more than 2 per cent. of the mothers, in ordinarily favorable cases, fail to survive Cesarean section, and that there has been great and progressive improvement in this respect in all cases operated upon, the favorable and unfavorable. This is also true in regard to the fetal mortality.

To-day it is not uncommon to meet the reports of long series of consecutive Cesarean operations without any maternal or fetal deaths. The number of cases, especially in hospital practice, which pass through an uncomplicated puerperium and are able to leave the hospital in good condition with a healthy child on the twelfth to the fifteenth and occasionally on the tenth day following this operation is increasing. According to our observations and experience, and we believe that this does not differ materially from that of a considerable number of surgeons, there is yet too high a percentage of morbidity following this operation, ranging from comparatively slight complications of short duration to those in which the life of the mother is in jeopardy for a considerable time and her convalescence is prolonged unduly, although she ultimately recovers. It is possible, we believe, and it

should be our endeavor to make improvement along this line and also more infants who are born alive should be made to survive.

From the nature of these cases and from the condition of some at the time when they first come under our care, we cannot altogether avoid complications following this method of delivery. If we are always successful in doing this, it is a fair suggestion that we have excluded from our list some patients who are entitled to and should be delivered by Cesarean section. By all means let us keep up and practise those methods of obstetric procedure which have stood the test of time and which have been helpful long before radical surgical procedures were available, because they were either unknown or were formerly too dangerous to be employed. But where these methods prove inadequate let us not be slow to give such patient the benefits which have been brought about by the progress in surgical technic. There is little danger that the experienced surgeon will perform Cesarean section unnecessarily. We are positive that many lives of mothers and infants are lost each year and many others are left more or less permanent physical wrecks who could have been saved by the timely employment of Cesarean section, and were it necessary we could recite individual cases which have come under our personal observation in convincing numbers to sustain this view. . This operation has earned something better than to be a last resort in difficult or impossible deliveries through the pelvis. It should be the operation of choice in more cases. For both mother and child, the immediate and ultimate results are better and the dangers not so great as in many of the forceps, versions, and accouchement forcé deliveries; it is a much more surgical procedure than any of these operations.

At the meeting of this Association in 1910, the writer reported the results of seventy-eight Cesarean sections which he had performed; briefly they were as follows:

Number of mothers who survived.....	65	.... 83.33 per cent.	
Number of mothers who died.....	13	.... 16.67 per cent.	
Total.....	78		
Number of children who survived.....	64	.... 80 per cent.	
Number of children who died.....	11	.... 13.75 per cent.	20 per cent.
Number of children still-born.....	5	.... 6.25 per cent.	20 per cent.
Total.....	80		

(Two cases of twins.)

Since that time the writer had performed sixty-nine Cesarean sections with the following results:

Number of mothers who survived.....	65	94.21 per cent.
Number of mothers who died.....	4	5.79 per cent.
Total..... ..	69	

Number of children delivered.....	70	(Twins once.)
Number of chidren who survived.....	62	88.57 per cent.
Number of children still-born.....	5 ...	7.14 per cent.
Number of children born alive but died before leaving hospital	3	4.29 per cent.
Total fetal mortality.....		11.43 per cent.

The cause of death in the case of the four mothers who died was eclampsia in two cases. They were in deep coma upon admission and were having repeated convulsions never regaining consciousness. There was almost total suppression of urine. Both died the first day after delivery but their infants survived. One case was that of central placenta previa, antepartum hemorrhage, midwife examinations. Patient was much overcome by the heat. Her child was dead upon admission. The fourth fatal case was in a very large primipara who was said to have been in labor two days and private physicians had attempted high forceps. The pelvic bones were large and thick and there was well-marked flattening of the pelvis. The fetus was dead upon admission; it was very large, weighing slightly over 12 pounds when delivered. The head was high above the pelvic inlet and the uterus was so tonically contracted that the fetus was held as in a vise. In this case craniotomy would have been a most difficult and long operation, and we believe quite as dangerous as that by the abdominal route. This patient died on the fourth day from general staphylococcic infection.

In the four fatal cases in this series we are confident that the operation had no bearing upon the final outcome. They would have died whatever the method of delivery had been, or if they had remained undelivered. Out of four desperate cases we were able to save the two children which had not already died before admission to the hospital.

In the first series of seventy-eight operations the maternal mortality is 16.67 per cent. The fetal mortality in eighty children thus delivered is 20 per cent.

In the second series of sixty-nine operations the maternal mortality is 5.79 per cent. The fetal mortality in seventy children thus delivered is 11.43 per cent. Or in the total number

of 147 operations the maternal mortality is 11.40 per cent. Of the total number of children thus delivered, 150 (twins three times) the fetal mortality is 16 per cent. In 114 of these cases, some form of contraction of the bony pelvis was either partly or wholly the indication for this operation. Eclampsia was the main indication for fourteen Cesarean sections of which ten mothers survived and four died, a maternal mortality of 28.57 per cent.; maternal recovery 71.43 per cent. Sixteen children were delivered from these fourteen cases (twins twice) and eleven children survived, giving a fetal mortality of 31.2 per cent. Three of these children were still-born (twins once). Sixty per cent. of the fetal mortality were still-births, killed by the eclamptic toxemia before operation was undertaken; fetal recovery 68.8 per cent.

Of the four eclamptic mothers who died, one (No. 48) had been in the hospital for several days under treatment and observation. She had one convulsion, was delivered of twins who lived, by Cesarean section, within an hour after her convulsion and she died on the operating-table just as the operation was finished, probably from cerebral hemorrhage. Two others were emergency ambulance cases, in constant coma and repeated convulsions, almost complete anuria; such urine as was obtained was nearly black in color and of syrupy consistency. Each died within the first twenty-four hours. Their infants lived (Nos. 91 and 132). The fourth case (No. 64) died on the second day. Her child, which was slightly premature and feeble died on the twenty-third day. None of these women were in labor. Twelve were pregnant the first time, one the second and one the third time. Tonic contraction of the uterus was the main indication for this operation in four cases. Prolapse of the umbilical cord with live children and undilated cervix in two cases. After ventral suspension or fixation of the uterus after long labor in four cases. Placenta previa in three cases. Two mothers with their children survived. One child was dead upon admission and the mother died from antepartum hemorrhage, midwife examinations; extreme heat and sepsis on the seventeenth day. Accidental hemorrhage—one case—great loss of blood, fetus dead, undilated cervix; the mother survived. Atresia of the vagina complicated by contracted pelvis was the indication twice in the same patient. The mother made a good recovery each time. The first child was small and feeble and died on the second day. The second child lived.

Contracted or otherwise deformed pelvis; eclampsia; placenta previa; accidental hemorrhage; prolapse of the umbilical cord with live child and rigid undilated cervix; tonic uterine contraction; after ventral suspension or fixation of the uterus; new growth, tumors obstructing or preventing dilatation of the birth canal; face impacted with chin posterior; rupture of the uterus with living child; large child with marked disproportion between it and the capacity of the mother's pelvis, regardless of measurements; mothers about to die from any cause, fetus alive; performing an antemortem rather than a postmortem operation wholly in the interest of the child; in the case of women who give histories of repeated vaginal deliveries, craniotomies, high forceps, induction of premature labor and yet have no child; these in the main, in well-considered cases, have been our indications for performing Cesarean section.

Shall we sterilize women at the time Cesarean section is performed? is a question which comes up repeatedly.

In the author's first paper upon this operation (*Lying-in Hospital Bulletin*, December, 1905), this statement appears: "Each operator must determine for himself whether it is wise or right to do an oophorectomy, a hysterectomy, or to otherwise sterilize these cases. The time does not seem opportune, nor the condition of the tissues favorable for such interference. Patients withstand repeated Cesarean operations now with infinitely less shock and traumatic injury and subsequent invalidism, than is experienced in one difficult high forceps operation." Experience confirms our belief in this. We do not sterilize these women, except in rare instances and for good and well-considered reasons. This has always been the teaching and practice in the Lying-in Hospital.

In the 147 Cesarean sections here reported we have sterilized one woman at the time of her second Cesarean section, because she had ruptured her uterus at the thinned lower left anterior uterine segment after long labor before reporting for treatment. The scar of the previous Cesarean wound in the uterus was intact, a living child was secured and the rent in the uterus sutured, the tubes were ligated, cut across and the uterine ends sutured over with peritoneum. Mother and child made a good recovery.

A second case who had already had four Cesarean sections, the first two by other operators, by the long abdominal incision and delivery of the uterus from the abdomen, so that at her third operation we found the uterus rather firmly adherent to the ab-

dominal wall to the left, partly above and partly below the umbilicus, and we found, upon opening the abdomen for the fifth Cesarean section, there had been an increase in the long loose adhesions in the omentum and about the intestines, since her fourth Cesarean section to such an extent that sterilization was advisable. After delivery of the child and closure of the uterus we removed a section from the left tube, ligated it and sutured peritoneum over the ends. The right tube could not be readily reached because of adhesions without endangering the uterine wound. Now, after three years, this women awaits a sixth Cesarean section, at which time the right tube will be closed.

REPEATED CESAREAN SECTION.

In our series we have preformed this operation upon patients who have already been delivered by Cesarean section one or more times, in twenty-six instances as follows:

Second Cesarean section	17
Third Cesarean section	7
Fourth Cesarean section	1
Fifth Cesarean section	1

All of the children lived.
Three of the mothers died.

CASE X.—Second Cesarean. First in another hospital. Negress. Specific vaginitis. Long in labor. Attempted forceps delivery before admission. Rachitic pelvis. Died of sepsis fourth day. Child lived.

CASE XXXIX.—Third Cesarean. Generally contracted pelvis. Small frail woman. Atonic uterus. Hemorrhage and shock at time of operation. Persistent slow bleeding. Died second day from shock and hemorrhage. Child lived.

CASE LIV.—Second Cesarean. Justominor pelvis. Twelfth day postpartum, discharge of pus from uterus and vagina, which showed many colon bacilli. No fever or other unfavorable symptoms at the time. Allowed to leave the hospital in apparently good condition of the fifteenth day. Two weeks later was readmitted with abscess between uterus and abdominal wall. Necro tic uterus removed. Patient died from sepsis the following day. Her child survived.

The preparation of the patient for this operation is that which is employed for any laparotomy. As a precaution against

uterine atony and hemorrhage, 1/2 dram of ergot or ergotole is injected deep into the muscles half an hour before operating.

THE OPERATION.

The operation advocated is as follows:

The abdomen is opened by a median incision 8 to 10 centimeters long from above down to the umbilicus. One or two gauze pads

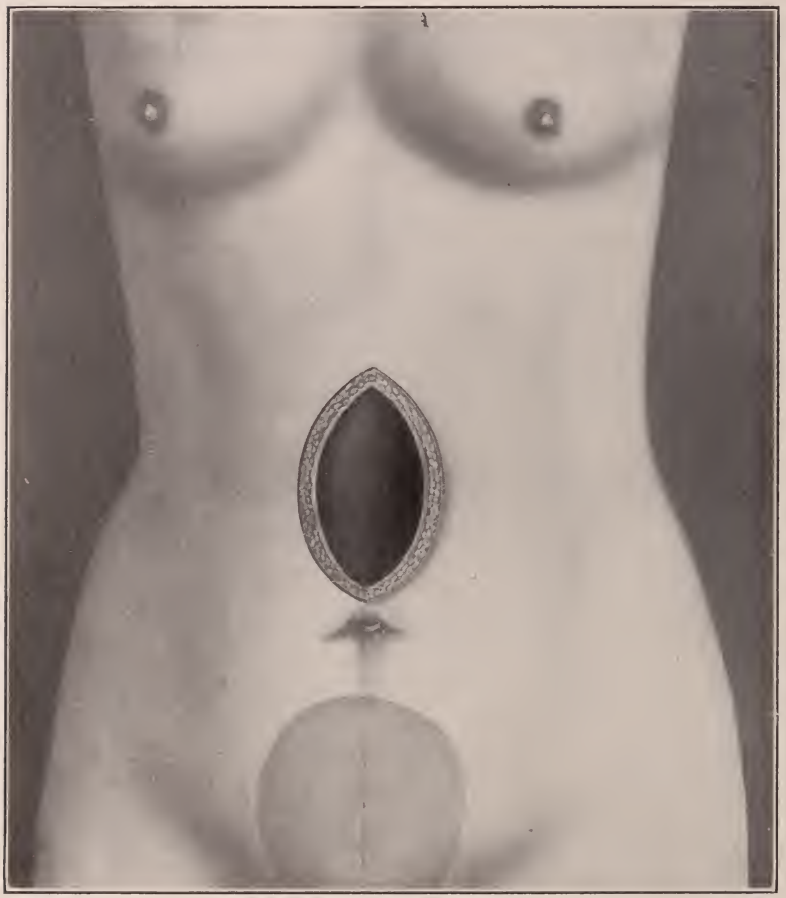

Fig. 1.

wet in warm normal salt solution are placed in the abdomen above the fundus of the uterus to hold back omentum and intestines. Often the uterus is found twisted upon its long axis,

usually toward the right side. An assistant standing beside the patient opposite the operator makes pressure with his hands outside against the side walls of the abdomen, rotating the uterus so that its anterior wall looks directly forward and so regulating his pressure that the uterus is held well up to the abdominal opening until it is emptied of its contents—child, placenta and membranes— and until several of the deep sutures are in place and tied. This is in no sense a maneuver to control hemorrhage. The uterus is then carefully opened with a scalpel so as to retain the membranes intact, by an incision a little longer than the abdominal opening in the midanterior surface of the uterus from just below the fundus downward. If the placenta is found beneath this wound, a not infrequent occurrence, it should be pushed aside or torn through and with the hand in the uterus, the membranes should be separated from the uterine wall while they are yet distended. Neglect of this precaution often means that they must be removed later piecemeal, sometimes with much difficulty and delay, after the child is delivered and retraction and contraction have begun, and at the time when dangerous uterine hemorrhage is most likely to occur.

The anterior thigh of the child, or the one which is most readily found, is grasped and delivered and breech extraction is done, turning the child after delivery of the shoulders, so that it faces toward the mother's face. Then with the middle and index fingers of the right hand astride its neck and with the same fingers of the left hand in its mouth, making traction on its lower jaw, the head is carefully delivered so that there is no sudden jolting or lacerating of the uterus in its delivery. An assistant stands ready with two long clamps in which he grasps the umbilical cord. The cord is cut between the clamps and the child is taken away to have respiration established, preferably into an adjoining room, so that the operating staff's attention may be given entirely to the mother. We now hook two fingers of the left hand into the uterus at its upper angle and place and tie the upper deep suture leaving the ends long; this is repeated at the lower angle of the wound and then with the right hand in the uterus, the placenta, membranes and clots are removed. The first assistant now discontinues abdominal pressure and holds the uterus up to but not out of the abdominal opening by the long ends of the sutures already in place. The uterine wound is closed by two layers of sutures. The deep layer is of No. 2 chromic gut, interrupted and about 1 centimeter apart passed through the uterine

peritoneum, close to its cut edge, well out into the muscle and down to but not through the endometrium and out in reverse order on the opposite side. A double turn is taken in the first knot which will then maintain its position without the necessity of its being held by a forceps in the hands of an assistant at the risk of cutting or weakening an important suture with the forceps. The suture is drawn tight enough to bring the edges of the uterine wall into accurate apposition, yet avoiding tension which would blanch and constrict the tissues. They are tied in three knots and cut short to the knot. The entrance and exit of the deep sutures are close to the cut edge of the uterine peritoneum and the short ends of these sutures render it more easy to completely bury them by the next layer which is a continuous suture of No. 1 chromic gut. Beginning at the lower angle of the uterine wound this suture is inserted and tied and the knot is covered by folding the peritoneum over it with subsequent stitches, passing the needle well outside of the tissue included in the deep layer of sutures and parallel to the line of uterine incision, peritoneum and some uterine muscle are caught up, alternately one side and then the other folding them over and completely burying the deep layer, much after the manner of the Cushing stitch in closure of intestinal wounds, leaving no raw surface, sutures or knot ends exposed and thus reducing to a minimum the chances of subsequent adhesions of adjacent tissues to the uterine wound. The deep interrupted suture holds the two faces of the uterine wound in apposition through the whole depth of the wound. If any interrupted suture gives way it affects only the tissue held by that one suture. If a continuous suture gives way at one point, its force is weakened throughout its entire length. Every precaution should be taken to avoid adhesions and to secure strong, firm union of the uterine wound so that the uterus may involute normally and take its position in the pelvis with its mobility unrestricted by adhesions and so that in the event of subsequent pregnancy the uterine scar will not rupture.

The pads are removed and the abdominal wound is closed in three layers. Dry sterile gauze pads are held in place by a snug adhesive strap across the abdominal wound which is an added support to the abdominal sutures. Elsewhere the dressings and binders are loose, so that the uterus, which is now in the lower part of the abdomen in the position occupied by a uterus after normal labor, may have free movement, avoiding the compression of the abdominal wall against the uterine wall and fixing the uterus

at the risk of adhesions between the two as was the case where the tight abdominal binder was employed. The uterus is not delivered from the abdomen at any time. The patient is placed in bed with the head of the bed elevated to favor drainage and descent of the uterus. In the uncomplicated case she suffers the pain and discomfort common to laparotomies for other causes but not more. Morphine in 1/8 grain doses is given by hypodermic injection as heeded and the abdominal distention is relieved by a retained rectal tube or by a saline irrigation. Usually the mother nurses her child and at the end of forty-eight hours she is treated as a normal delivery. On the eighth day postpartum, she sits up in a chair and by the twelfth day she is ready to leave the hospital. Several of our patients have insisted upon going home on the tenth day, while others who were ready to go home on the twelfth day, for one cause or another, found it inconvenient to leave at that time, or else they lived at a distance and they were advised not to attempt to travel so soon. In the uninfected cases, the blood and liquor amnii which finds its way into the peritoneal cavity does no harm and no great effort is made to remove it.

We find the following advantages in the use of the small median incision entirely above the umbilicus.

There is no danger of adhesions between the uterine and the abdominal wounds, and the uterus is therefore allowed to involute normally and take up its position in the pelvis without restricted mobility.

In the midline the abdominal wall is very thin; no important structures are divided and the tissues are quite elastic so that a small opening is all that is necessary for the delivery of the child. The small abdominal opening offers much less chance for the escape of intestine and omentum and less opportunity and necessity to handle the abdominal contents. Located above the umbilicus there is much less probability of the subsequent occurrence of hernia, through the cicatrix, for it is above the most depended part of the abdomen which is subjected to the greatest strain when the patient is in the upright position and more support is given at this point by the recti muscles as they tend to come together toward their upper attachments.

While we have not had an opportunity to examine all of the patients upon whom we have performed this method of Cesarean section, there is yet a considerable number who return for sub-

sequent delivery in this way—or for other causes—and thus far we have not seen hernia in any of our patients.

HEMORRHAGE.

Hemorrhage has always been considered one of the great dangers of this operation. While it is a real danger, it has, we believe, been overrated. In many instances there is less actual loss of blood than during a normal labor. Good uterine contraction is a great safeguard, which is favored by the injection of ergot, before mentioned. There are two possible sites from which we may look for hemorrhage—the cut surfaces of the uterine wall and the field of the placenta. That from the uterine wall is readily held in check by digital pressure, or very occasionally a clamp and later by the operator's hand and wrist while he is separating the membranes and extracting a foot and then by the pressure of the child during its delivery. After the extraction of the placenta if there is undue bleeding from that source, temporary packing with pads or a sterile towel hold it in check, and then the uterine sutures, which effectually ligate the vessels in the uterine wall, and are our most efficient aids in stimulating uterine contraction. Packing the uterus is rarely necessary and fatal hemorrhage is a very unusual outcome.

RUPTURE OF THE UTERUS.

This has occurred but once in the uterine scar in our series ane then only after prolonged labor. No symptoms were produced and only a small opening was made. The mother and child made a quick recovery. One other case of prolonged labor in labor subsequent to Cesarean section ruptured the thinned lower uterine segment but mother and child recovered. The scar from the first Cesarean was strong and intact. It is a danger which we should keep in mind and take great pains in closing the uterus and securing accurate apposition of the cut edges of the uterus so that a strong thick scar may form.

The accompanying table gives in consecutive order many details of our whole series of this operation.

Case No.	Conf. No.	Date of admission	Date of confinement	Diagnosis	Indication	Result, child	Day of discharge	Remarks	Para
1	21,259	Nov. 19, 1900	Jan. 23, 1901	Vertex L. O. A.	Rachitic dwarf	Lived.	36th	Operation in tenement.	I
2	22,752	Aug. 18, 1901	Aug. 18, 1901	Vertex L. O. A.	Flattened, generally contracted pelvis; bicorn. uterus.	Stillbirth.	43d	Operation in tenement. In care of midwife two days. High forceps attempted by private physicians.	I
3	23,369	Aug. 10, 1901	Nov. 6, 1901	Vertex.	Generally contr., prolonged labor (midwife).	Died 3d day	22 hrs., died.	Sepsis; suppression of urine. Operation in tenement. Last case—uterus delivered — from abdomen.	I
4	2,973	July 20, 1903	Aug. 12, 1903	Vertex L. O. A.	Rachitic pelvis.	Lived.	38th	First case in which uterus was not delivered.	I
5	3,093	Sep. 15, 1903	Sep. 22, 1903	Vertex L. O. A.	Funnel pelvis.	Lived.	34th	.....	III
6	3,168	Sep. 17, 1903	Oct. 13, 1903	Vertex L. O. A.	Ankylosis right hip, Naegele pelvis.	Lived.	58th	.....	I
7	3,228	Oct. 24, 1903	Nov. 23, 1903	.....	.....	Not viable.	39th	General sarcomatosis; pregnant seventh month. Sarcoma of pelvic and abdominal organs; anasarca. Died at home seventy-sixth day.	I
8	3,383	Nov. 21, 1903	Dec. 18, 1903	Vertex L. O. A.	Rachitic dwarf; marked lordosis.	Lived.	52d	.....	I
9	3,684	Feb. 26, 1904	Feb. 26, 1904	Vertex R. O. A.	Rachitic, oblique.	Lived.	26th	.....	I
10	3,766	Mar. 18, 1904	Mar. 18, 1904	Vertex R. O. A.	Generally contracted pelvis.	Lived.	4th died.	Sepsis; prolonged labor; attempted delivery before admission. Second Cesarean section.	II
11	3,857	Apr. 11, 1904	Apr. 11, 1904	Vertex.	Rachitic pelvis.	Lived.	30th	.....	II
12	4,830	Oct. 19, 1904	Nov. 20, 1904	Vertex L. O. A.	Rachitic pelvis; same as No. 4 (2973).	Lived.	29th	First case with median incision wholly above umbilicus.	III

Case No.	Conf. No.	Date of admission	Date of confinement	Diagnosis	Indication	Result, child	Day of discharge	Remarks	Para
13	4,867	Nov. 20, 1904	Nov. 29, 1904	Vertex R. O. A.	Naegele pelvis; right side.	Lived.	19th	Scar 7 cm. long. Sitting up on fourteenth day.	I
14	5,079	Jan. 17, 1905	Jan. 17, 1905	Vertex L. O. A.	Flat pelvis; long labor. Forceps attempted by outside doctors.	Died in 53 hrs.	3d died.	General peritonitis; gangrene endometritis; general streptococcemia and staphylococcemia.	I
15	5,249	Feb. 20, 1905	Feb. 20, 1905	Vertex L. O. A.	Generally contracted pelvis.	Marasmus, died 25th day.	41st	.....	I
16	5,747	May 27, 1905	June 7, 1905	Breech L. S. A.	Double promontory. Rachitic pelvis.	Lived.	18th	Before this other operators did craniotomy and two Cesareans. Third Cesarean section.	IV
17	5,880	July 23, 1905	July 23, 1905	Vertex.	Carcinoma cervix and vagina.	Lived.	29th	.....	II
18	6,260	July 8, 1905	Sept. 11, 1905	Vertex L. O. A.	Flat pelvis.	Lived.	29th	.....	I
19	6,449	Sep. 28, 1905	Oct. 18, 1905	Vertex R. O. A	Generally contracted.	Lived.	18th	Second Cesarean. C. S. 6–21–'04. Other operator.	II
20	7,194	Mar. 11, 1906	Mar. 12, 1906	Vertex L. O. A.	Flat, figure 8 pelvis.	Lived.	16th	.....	I
21	7,276	Mar. 27, 1906	Mar. 27, 1906	Face R. M. P.	Obliquely contracted pelvis. Impacted face. Tonic uterine contractions.	Marasmus, died 28th day.	36th	Cephalic and podalic versions failed.	I
22	7,391	Apr. 13, 1906	Apr. 14, 1906	Vertex L. O. A.	Rachitic dwarf.	Lived.	25th	.....	I
23	7,398	Apr. 16, 1906	Apr. 16, 1906	Vertex L. O. A.	Contracted pelvis	Lived	23d	Second Cesarean. C. S. 10–27–'04. Other operator.	IV
24	7,545	May 10, 1906	May 10, 1906	Vertex L. O. A.	Flat pelvis.	Lived.	38th	.....	I

Case No.	Conf. No.	Date of admission	Date of confinement	Diagnosis	Indication	Result, child	Day of discharge	Remarks	Para
25	8,727	Nov. 25, 1906	Nov. 25, 1906	Vertex R. O. T.	Generally contr. pelvis.	Lived.	15th	.....	II
26	8,931	Dec. 25, 1906	Dec. 25, 1906	Vertex L. O. A: twins.	First child delivered in O. P. D. 38,124. Tonic uterine contractions.	Died.	31st	Version and high forceps attempted. Admitted as ruptured uterus.	IV
27	8,918	Dec. 23, 1906	Dec. 23, 1906	Vertex L. O. A.	Flat, generally contracted.	Lived.	18th	.....	II
28	9,189	Feb. 1, 1907	Feb. 1, 1907	Vertex R. O. P.	High forceps attempted; private doctor. Flat pelvis, long labor.	Died 10th day.	Died 2d	General streptococcemia both in mother and child.	I
29	10,100	Apr. 29, 1907	June 16, 1907	Vertex L. O. A.	Second Cesarean. Same as No. 65. Rachitic pelvis.	Lived.	22d	.....	I
30	10,128	May 12, 1907	June 19, 1907	Breech L. S. A.	Rachitic pelvis. Long spines.	Lived.	18th	First Cesarean No. 11 (3857). Second Cesarean section.	IV
31	10,487	Aug. 4, 1907	Aug. 5, 1907	Vertex L. O. A.	Flat justo-minor.	Lived.	34th	.....	II
32	10,499	Aug. 6, 1907	Aug. 6, 1907	Vertex R. O. A.	Flat justo-minor.	Lived.	20th	.....	I
33	10,792	Sep. 10, 1907	Sep. 10, 1907	Vertex L. O. A.	Flat rachitic pelvis.	Lived.	17th	Second Cesarean. First Cesarean. Same as No. 24 (7545).	II
34	10,968	July 19, 1907	Oct. 7, 1907	Vertex R. O. A.	Rachitic dwarf.	Stillbirth.	27th	Cord prolapsed while taking ether for Cesarean.	I
35	11,000	Oct. 13, 1907	Oct. 13, 1907	Vertex R. O. A.	Double promontory. Laterally contracted pelvis.	Lived.	15th	.....	III
36	11,157	Nov. 7. 1907	Nov. 8, 1907	Vertex R. O. A.	Flat pelvis.	Lived.	29th	.....	II
37	11,169	Nov. 10, 1907	Nov. 10, 1907	Vertex L. O. A.	Eclampsia, 9½ mos.	Lived.	17th	Not in labor.	I

Case No.	Conf. No.	Date of admission	Date of confinement	Diagnosis	Indication	Result, child	Day of discharge	Remarks	Para
38	11,258	Nov. 22, 1907	Nov. 23, 1907	Vertex.	Generally contracted pelvis.	Lived.	16th	First child died sixth day post-partum. High forceps.	II
39	11,481	Dec. 25, 1907	Dec. 26, 1907	Vertex L. O. A.	Generally contracted pelvis.	Lived.	2d, died.	Shock; hemorrhage. Third Cesarean section.	III
40	11,607	Jan. 9, 1908	Jan. 9, 1908	Vertex.	Ruptured uterus. Same as No. 27 (918). 2d C. S.	Lived.	20th	Delayed reporting until long in labor. Second Cesarean.	III
41	11,823	Feb. 5, 1908	Feb. 5, 1908	Vertex.	Impacted in pelvis. Fibroids of uterus.	Lived.	19th	Resection of tubes.	IV
42	11,906	Feb. 15, 1908	Feb. 16, 1908	Breech.	Fourth Cesarean.	Lived.	20th	Fourth Cesarean. Same as No. 16 (5747).	VI
43	12,148	Mar. 17, 1908	Mar. 17, 1908	Vertex.	Not in labor. Eclampsia. Full term. Justo-minor	Lived.	61st	Homeless.	I
44	12,243	Mar. 27, 1908	Mar. 27, 1908	Vertex.	Lobar pneumonia. Moribund.	Died 5th.	Died.	Died fourteen hours after operation.	VI
45	12,249	Mar. 31, 1908	Mar. 31, 1908	Breech L. S. A.	Acute dilatation of stomach. Naegele pelvis.	Lived.	Died.	Anesthesia taken badly. Died thirty minutes after operation.	II
46	12,453	Apr. 29, 1908	Apr. 29, 1908	Vertex L. O. A.	Flat pelvis.	Lived.	Died.	Died fifty-fourth day; septic endometritis.	II
47	12,482	May 1, 1908	May 2, 1908	Breech.	Generally contracted.	Lived.	14th	.....	I
48	12,483	Apr. 21, 1908	May 2, 1908	Twins, both vertex.	Eclampsia, 9½ mos. Toxemia.	Both lived.	Died.	Died on table. Not in labor.	I
49	12,531	May 8, 1908	May 8, 1908	Vertex L. O. A.	Justo-minor flat.	Lived.	26th	Inspiration pneumonia.	I
50	12,583	May 15, 1908	May 15, 1908	Face R. M. A.	Flat pelvis.	Lived.	16th	.....	I
51	12,661	May 27, 1908	May 28, 1908	Breech L. S. A.	9½ mos. A. P. Eclampsia.	Lived.	31st	.....	I

Case No.	Conf. No.	Date of admission	Date of confinement	Diagnosis	Indication	Result, child	Day of discharge	Remarks	Para
52	12,938	June 28, 1908	June 28, 1908	Vertex L. O. T.	Flattened pelvis; generally contracted.	Lived.	13th	.....	IV
53	14,178	Dec. 9, 1908	Dec. 9, 1908	Vertex L. O. A.	Flat, generally contracted, attempted high forceps.	Lived.	24th	.....	VIII
54	14,565	Jan. 29, 1909	Jan. 30, 1909	Vertex L. O. A.	Justo-minor pelvis.	Lived.	15th, died.	Second Cesarean. Returned to hospital 29th day, mural abscess. Died 39th day.	III
55	14,637	Feb. 10, 1909	Feb. 10, 1909	Vertex R. O. A.	Tumor, probably dermoid.	Lived.	14th	.....	VIII
56	14,731	Feb. 11, 1909	Feb. 20, 1909	Vertex L. O. A.	Flat rachitic pelvis.	Lived.	14th	.....	I
57	15,479	May 19, 1909	June 6, 1909	Vertex.	Neoplasm of cervix.	Died 4th day.	16th	Hemophilia neonatorum.	III
58	15,575	June 12, 1909	June 19, 1909	Vertex R. O. A.	Flat pelvis. Ventral fixation.	Lived.	20th	.....	V
59	16,500	Oct. 31, 1909	Oct. 31, 1909	Vertex L. O. A.	Rachitic pelvis.	Lived.	16th	Same as No. 16 and 42 (5747) 5th Cesarean.	VII
60	16,558	Nov. 4, 1909	Nov. 12, 1909	Vertex R. O. A.	Flat pelvis. Placenta previa marginata.	Lived.	43d	Not in labor. Persistent bleeding.	I
61	16,890	Jan. 4, 1910	Jan. 4, 1910	Vertex L. O. A	Generally contracted.	Lived.	12th	.....	I
62	16,961	Jan. 12, 1910	Jan. 15, 1910	Vertex R. O. A.	Exostosis back of symphysis.	Lived.	12th	Generally contracted pelvis.	I
63	16,977	Jan. 17, 1910	Jan. 17, 1910	Vertex L. O. A.	Laterally contracted pelvis.	Ch. died 54th day. Atelectasis.	59th	Operation 25th day to cure old umbilical hernia.	III
64	17,107	Feb. 4, 1910.	Feb. 5, 1910	Vertex L. O. A.	Not in labor. Eclampsia. 8 1/2 mos.	Died 23d.	Died 2d.	.....	I

Case No.	Conf. No.	Date of admission	Date of confinement	Diagnosis	Indication	Result, child	Day of discharge	Remarks	Para
65	17,113	Feb. 6, 1910	Feb. 6, 1910	Vertex L. O. A.	Rachitic pelvis.	Lived.	12th	Second Cesarean. Same as No. 29 (10,100).	II
66	17,128	No. 6, 1909	Feb. 10, 1910	Vertex L. O. A.	In labor 48 hrs. Small rachitic pelvis.	Lived.	25th	Becoming exhausted p. 120.	I
67	17,214	Feb. 19, 1910	Feb. 23, 1910	Vertex R. O. A.	9th mo. Not in labor. Justo-minor pelvis.	Died 18th day.	Died 7 hrs.	Streptococcemia; cerebrospinal meningitis.	I
68	17,310	Feb. 26, 1910	Mar. 10, 1910	Vertex R. O. A.	Rachitic dwarf. 2d Cesarean section.	Lived.	12th	Second Cesarean. Same as No. 22 (7391).	II
69	17,493	Mar. 31, 1910	Apr. 5, 1910	Vertex R. O. A.	Rachitic contracted pelvis.	Lived.	12th	First child craniotomy.	II
70	17,514	Apr. 9, 1910	Apr. 9, 1910	Vertex L. O. A.	Rigid cervix. Living child. Not in labor. Eclampsia.	Lived.	24th	.....	I
71	17,562	Apr. 18, 1910	Apr. 18, 1910	Vertex R. O. A.	Flat pelvis. 2d C. S.	Lived.	12th	Second Cesarean. Same as No. 35 (11,000).	II
72	17,603	Apr. 26, 1910	Apr. 26, 1910	Both vertex; twins.	Eclampsia. No sign of fetal life. Twins.	Stillbirths.	19th	.....	I
73	17,702	May 16, 1910	May 16, 1910	Vertex L. O. A.	Contracted pelvis.	Lived.	11th	.....	II
74	17,780	June 1, 1910	June 1, 1910	Vertex R. O. A.	Contracted inlet. Exostosis. Same as No. 50 (12,583)	Lived.	17th	Rupture of uterus through old Cesarean scar. Second Cesarean section.	VIII
75	17,856	June 20, 1910	June 20, 1910	Vertex R. O. A.	Rachitic dwarf.	Lived.	13th	.....	II
76	17,938	July 6, 1910	July 11, 1910	Breech.	Rachitic dwarf. 2d C. S. Same as No. 31 (10,487)	Lived.	15th	.....	III
77	18,101	Aug. 17, 1910	Aug. 18, 1910	Vertex L. O. A.	Long labor, 90 hrs. Rachitic flat pelvis.	Lived.	6th died	Midwife. Septicemia. Streptococcemia.	I

Case No.	Conf. No.	Date of admission	Date of confinement	Diagnosis	Indication	Result, child	Day of discharge	Remarks	Para
78	18,109	Aug. 18, 1910	Aug. 18, 1910	Vertex R. O. A.	Contracted pelvis. Atresia of vagina.	Died 2d day.	12th	Hydramnios. In labor ten hours. Child premature.	I
79	18,466	Oct. 21, 1910	Oct. 22, 1910	Vertex L. O. A.	Irregularly contracted pelvis.	Lived.	14th	.....	V
80	18,992	Jan. 28, 1911	Jan. 28, 1911	Vertex R. O. A.	Flat rachitic pelvis.	Lived.	11th	Third Cesarean. Ruptured ectopic. Since second Cesarean section. Same as Nos. 24 and 33.	IV
81	19,001	Jan. 30, 1911	Jan. 30, 1911	Vertex R. O. P.	Gen. contracted pelvis; long labor.	Lived.	14th	.....	I
82	19,029	Feb. 3, 1911	Feb. 3, 1911	Vertex L. O. A.	Eclampsia, 8th mo. Not in labor.	Lived.	27th	.....	I
83	19,148	Feb. 21, 1911	Feb. 28, 1911	Vertex R. O. P.	Funnel pelvis. Slow, dry labor. Tonic contraction.	Stillbirth.	15th	On posterior wall of uterus, broad contracted band.	I
84	19,205	Mar. 5, 1911	Mar. 5, 1911	Vertex R. O. A.	Eclampsia. 8th mo. Not in labor.	Lived.	17th	.....	I
85	19,208	Feb. 8, 1911.	Mar. 5, 1911	Vertex L. O. A.	Funnel, generally contracted pelvis.	Lived.	17th	.....	I
86	19,223	Mar. 8, 1911	Mar. 8, 1911.	Vertex L. O. A.	Eclampsia. 8th mo. Not in labor.	Lived.	12th	.....	I
87	19,225	Mar. 8, 1911	Mar. 8, 1911	Vertex R. O. P.	Funnel pelvis. Long labor.	Lived.	12th	.....	I
88	19,276	Mar. 17, 1911	Mar. 17. 1911	Vertex L. O. A.	Contracted pelvis. Large child.	Lived.	12th	.....	V
89	19,307	Mar. 21, 1911	Mar. 21, 1911	Vertex L. O. A.	Laterally contracted pelvis.	Lived.	10th	High forceps attempted.	I
90	19,321	Mar. 24, 1911	Mar. 24, 1911	Vertex R. O. P.	Tumor, dermoid (?) posterior part of pelvis.	Lived.	16th	Second Cesarean section. Same as No. (14,637).	IX

Case No.	Conf. No.	Date of admission	Date of confinement	Diagnosis	Indication	Result, child	Day of discharge	Remarks	Para
91	19,353	Mar. 30, 1911	Mar. 30, 1911	Vertex L. O. A.	Generally contracted pelvis.	Lived.	10th	.....	I
92	19,367	Mar. 31, 1911	Mar. 31, 1911.	Vertex L. O. A.	Eclampsia, 8th mo. Not in labor.	Lived.	Died 1st.	Suppression of urine; repeated convulsions.	I
93	19,582	May 4, 1911	May 4, 1911	Vertex L. O. A.	Funnel pelvis.	Lived.	12th	Two stillbirths; third child lived twenty-four hours. All operative vaginal deliveries.	IV
94	19,586	May 5, 1911	May 5, 1911	Vertex.	Generally contracted pelvis.	Lived.	14th	Second Cesarean. Same as No. 61.	II
95	19,617	May 8, 1911	May 8, 1911	Vertex L. O. A.	Rachitic pelvis; narrow outlet.	Lived.	12th	.....	I
96	19,823	June 2, 1911.	June 3, 1911	Vertex R. O. A.	Generally contracted pelvis.	Lived.	13th	.....	II
97	19,898	June 14, 1911	June 14, 1911	Vertex R. O. T.	Funnel pelvis; double promontory.	Lived.	11th	.....	I
98	19,909	June 16, 1911	June 17, 1911	Vertex R. O. A.	Funnel pelvis; double promontor.	Lived.	12th	.....	III
99	19,951	June 4, 1911	June 23, 1911	Vertex L. O. A.	Rachitic pelvis.	Lived.	11th	Third Cesarean. Same as Nos. 29 and 65.	III
100	20,028	July 4, 1911	July 4, 1911	Breech L. S. A.	Placenta previa, central. Midwife exams.	Stillbirth.	Died 17th day.	General sepsis; staphylococcus aureus. A. p. hemorrhage. Heat prostration.	I
101	20,083	July 10, 1911	July 10, 1911	Vertex L. O. T.	Justo-minor pelvis; extended cervix.	Lived.	12th	.....	I
102	20,136	June 14, 1911	July 21, 1911	Vertex L. O. A.	Oblique pelvis; narrow inlet.	Lived.	16th	Abortion at fourth month; second labor, twins, one lived; third labor, high forceps, child lived twenty-four hours.	IV

Case No.	Conf. No.	Date of admission	Date of confinement	Diagnosis	Indication	Result, child	Day of discharge	Remarks	Para
103	20,180	June 1, 1911	July 26, 1911	Vertex L. O. A.	Naegele pelvis.	Lived.	17th	Remained longer because of operation upon child.	I
104	20,200	July 28, 1911	July 28, 1911	Vertex L. O. A.	Flat. Generally contracted pelvis. Septic.	Lived.	74th	Second Cesarean section. First in another hospital.	II
105	20,677	Oct. 8, 1911	Oct. 10, 1911	Vertex L. O. A.	Contracted pelvis.	Lived.	12th	.....	III
106	20,689	Oct. 9, 1911	Oct. 12, 1911	Breech R. S. A.	Contracted pelvis.	Lived.	12th	.....	I
107	20,764	Oct. 24, 1911	Oct. 25, 1911	Vertex L. O. A.	Contracted pelvis.	Lived.	11th	Second Cesarean. Same as No. 62.	II
108	20,781	Oct. 27, 1911	Oct. 27, 1911	Vertex L. O. A.	Central placenta previa. Hemorrhage.	Lived.	11th	.....	XIV
109	20,792	Oct. 24, 1911	Oct. 30, 1911	Vertex R. O. A.	Dry labor. Tonic uterine contractions.	Lived.	12th	Undilated cervix. Condition of fetus poor.	I
110	20,795	Oct. 30, 1911	Oct. 30, 1911	Vertex R. O. A.	Flat, generally contracted pelvis.	Lived.	13th	.....	VI
111	20,808	Oct. 31, 1911	Oct. 31, 1911	Vertex L. O. A.	Accidental hemorrhage. Undilated cervix.	Stillbirth	12th	Child dead before operation.	XIII
112	20,985	Nov. 26, 1911	Nov. 26, 1911	Breech L. S. A. Twins, Breech R. S. A.	Prolapsed cord. Undilated cervix.	Both lived.	14th	.....	I
113	20,728	Oct. 18, 1911	Oct. 18, 1911	Vertex L. O. A.	Generally contracted pelvis.	Lived.	21st	First child by craniotomy.	II
114	21,037	Nov. 29, 1911	Dec. 2, 1911	Vertex L. O. A.	Funnel pelvis.	Lived.	23d	.....	II
115	21,039	Dec. 2, 1911	Dec. 2, 1911	Vertex R. O. P to R. O. T.	Flat, generally contracted pelvis.	Lived.	14th	.....	II

Case No.	Conf. No.	Date of admission	Date of confinement	Diagnosis	Indication	Result, child	Day of discharge	Remarks	Para
116	21,101	Dec. 11, 1911	Dec. 12, 1911	Vertex R. O. A.	Contracted pelvis.	Lived.	33d	.....	I
117	21,107	Dec. 12, 1911	Dec. 13, 1911	Vertex L. O. A.	After ventral suspension.	Lived.	12th	Cervix displaced and undilated. Long labor.	XII
118	21,108	Dec. 12, 1911	Dec. 13, 1911	Vertex L. O. A.	Contracted pelvis. Tonic contraction of uterus.	Stillbirth.	Died 4th day. Sepsis.	Long labor. Dead fetus. Attempted high forceps, by private physicians.	I
119	21,146	Dec. 20, 1911	Dec. 20, 1911	Vertex L. O. A.	Atresia of vagina. Contracted pelvis. Undilated cervix.	Lived.	11th	Second Cesarean. Same as No. 78.	II
120	21,148	Dec. 20, 1911	Dec. 20, 1911	Vertex L. O. A.	Contracted pelvis 3 days in labor.	Lived.	10th	.....	III
121	21,209	Dec. 27, 1911	Dec. 28, 1911	Vertex R. O. A.	Contracted pelvis. Long in labor.	Lived.	10th	.....	V
122	21,240	Jan. 2, 1912	Jan. 2, 1912	Vertex L. O. A.	Eclampsia, 9th mo.	Died 8th day.	12th	.....	I
123	21,241	Jan. 1, 1912	Jan. 2, 1912	Vertex R. O. A.	Kyphotic dwarf.	Died 3d day.	14th	Small, feeble child.	I
124	21,244	Jan. 2, 1912	Jan. 3, 1912	Vertex R. O. A.	Justo-minor pelvis.	Lived.	16th	Pubiotomy. Previous labor.	III
125	21,315	Jan. 12, 1912	Jan. 12, 1912	Vertex L. O. A.	Prolapsed cord. Undilated cervix.	Died 15th day. Sepsis.	22d	.....	V
126	21,323	Jan. 12, 1912	Jan. 13, 1912	Vertex L. O. A.	Generally contracted pelvis. Long labor.	Lived.	28th	Floating vertex.	III
127	21,394	Jan. 21, 1912	Jan. 22, 1912	Breech L. S. A.	Funnel pelvis, 21 hrs. dry labor.	Lived.	37th	Two stillbirths. No living child.	III
128	21,407	Jan. 24, 1912	Jan. 24, 1912	Vertex L. O. A.	Flat pelvis.	Lived.	12th	Third Cesarean. Same as Nos. 35 and 71.	V
129	21,474	Feb. 2, 1912	Feb. 2, 1912	Vertex R. O. A.	Flat pelvis.	Lived.	11th	.....	V

Case No.	Conf. No.	Date of admission	Date of confinement	Diagnosis	Indication	Result, child	Day of discharge	Remarks	Para
130	21,522	Feb. 6, 1912	Feb. 8, 1912	Vertex L. O. T.	Rachitic. Generally contracted pelvis.	Lived.	13th	.....	I
131	21,821	Mar. 25, 1912	Mar. 25, 1912	Breech R. S. A.	Rachitic dwarf. P. P. Hemorrhage.	Lived.	13th	Third Cesarean. Same as Nos. 22 and 68.	V
132	21,911	Apr. 5, 1912	Apr. 5, 1912	Vertex L. O. A.	Eclampsia. Suppression of urine.	Lived.	Died in 25 hrs.	Constant coma.	II
133	21,966	Apr. 13, 1912	Apr. 13, 1912	Vertex L. O. A.	Funnel pelvis.	Lived.	29th	.....	VI
134	21,987	Apr. 17, 1912	Apr. 17, 1912	Breech R. S. A.	After ventral suspension.	Lived.	26th	Long in labor. Cervix not dilated and displaced upward.	VI
135	22,049	May 1, 1912	May 1, 1912	Vertex L. O. A.	Flat, generally contracted pelvis.	Lived.	13th	.....	II
136	22,059	May 2, 1912	May 2, 1912	Vertex R. O. A.	Contracted pelvis.	Lived.	59th	Mural abscess. General sepsis.	I
137	22,135	May 13, 1912	May 13, 1912	Vertex L. O. A.	Rachitic pelvis.	Lived.	12th	.....	I
138	22,219	May 27, 1912	May 27, 1912	Vertex L. O. A.	Rachitic pelvis.	Lived.	11th	.....	I
139	22,254	May 31, 1912	May 31, 1912	Vertex L. O. A.	Flattened pelvis.	Lived.	11th	.....	I
140	22,283	June 4, 1912	June 4, 1912	Vertex L. O. A.	Flat, generally contracted pelvis.	Lived.	20th	.....	II
141	22,459	June 29, 1912	June 29, 1912	Vertex R. O. A.	Funnel pelvis.	Lived.	11th	.....	III
142	22,509	July 7, 1912	July 7, 1912	Vertex L. O. A.	Generally contracted pelvis.	Lived.	12th	.....	III
143	22,525	July 9, 1912	July 9, 1912	Vertex R. O. A.	Generally contracted pelvis.	Lived.	13th	.....	I
144	22,567	July 16, 1912	July 16, 1912	Vertex R. O. A.	Generally contracted pelvis, especial laterally.	Lived.	62d	Twenty-four hours dry labor. Septic.	I

Case No.	Conf. No.	Date of admission	Date of confinement	Diagnosis	Indication	Result, child	Day of discharge	Remarks	Para
145	22,643	July 26, 1912	July 26, 1912	Vertex R. O. A.	Eclampsia. 7 1/2 months.	Stillbirth.	40th	Persistent nephritis.	I
146	22,794	Aug. 14, 1912	Aug. 15, 1912	Vertex R. O. A.	Rachitic, generally contracted pelvis.	Lived.	19th	First by version and craniotomy.	II
147	22,866	Aug. 25, 1912	Aug. 25, 1912	Vertex L. O. A.	Rachitic, generally contracted pelvis.	Lived.	12th	First child craniotomy.	II

42 East Thirty-fifth Street.

CESAREAN SECTION IN DOUBLE UTERUS AND DOUBLE VAGINA.

BY

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During the growth of the female fetus, the Müllerian ducts of the Woolfian bodies not infrequently fail to develop properly. The most common of these failures is the early arrest of the developing uterus, giving rise to the fetal or infantile variety of uterus in adult life. Even the complete absence of the uterus is not unheard of. Burridge in 1897 collected from the literature 350 such cases, while McCann and others make note of the absence of the entire internal female generative system.

In the process of normal fetal development the septum between Müller's ducts disappears, commencing below and extending upward. When the fetus develops abnormally, this septum may not even begin to disappear. Müller reports a case in which there was a complete reduplication of the internal generative organs, including the hymen. Or it may cease at any point; and, because the order of septum disappearance is from the lowest point up, double uteri are more frequent than double vaginæ. Thus it naturally follows that the presence of a partial septum at the vault of the uterus is not very uncommon.

Of the wholly double uteri, Dunning in 1889 was able to find in the literature 230 cases, and 144 of double vagina. In a review of the later literature, I have been able to augment the number to about 330 cases of double uterus, and 230 of double vagina.

To intimate that this small number is anything like an accurate estimate would undoubtedly be misleading. For this discrepancy between facts and records there is, however, a reason. This condition of reduplication, which on first thought would seem to be such a gross anatomical defect as to be easily discovered, is instead most easily overlooked, as will be readily appreciated by any one who has seen a case. Almost never is a vaginal septum discovered by the patient or her husband. This difficulty in recognizing double vaginæ is both illustrated and proven by the literature. For, of the cases reported, two-

thirds were discovered at the time of pregnancy; of the other third a large percentage was found during rigid examination, necessitated by a stenosis of some point in the canal; while but a very few cases were found during the routine gynecological examinations.

Hicks of London reports a tumor in the right inguinal region supposed to be extrauterine pregnancy. On examination it was found to be right-sided pregnancy of double uterus and vagina. Delivery was uneventful. Later the patient was attended by another physician who failed to find the condition present.

The amusing story is told of two physicians in consultation. After each had examined the patient, the first said he found the cervix soft and dilated, the second insisted that the cervix was hard and undilated. They agreed that the examination must be repeated, whereupon each reported the condition formerly found by the other. Of course the explanation is simple: Each physician explored opposite sides of the vagina and uterus in the two examinations.

As to the frequency of the anomaly in the middle West compared with other parts of the United States, I am unable to say, except that I have so far found but one case reported from this section, that of Dr. Kelley, in the *Cleveland Medical Gazette* of 1885. But a cursory inquiry among a few friends has elicited the fact that several other cases have been noted in Cleveland.

Some twenty years ago, one of my young doctor friends told me of a difficult labor he had just attended, which impressed him as being out of the ordinary, though he could not satisfactorily account for the phenomena noted. The labor was long and tedious, but terminated spontaneously. After the birth of the child the perineum did not seem to be torn, but the patient bled very freely; and, protruding from the vulva, was a large tag of mucous membrane, which my friend was unable to identify, though he was very certain it was not the cervix nor any portion of it. This was probably a case of double vagina with laceration of the septum.

Aside from this doubtful case, I have heard of seven authentic cases, not including those in my own practice.

Dr. C. A. Hamann, in a private interview, described two cases he had seen: One with a pregnancy in an undeveloped horn in which he did a resection of the pregnant thin horn to prevent rupture.

Dr. F. A. Bunts also tells me that he has had two cases, one of which had had frequent abortions of pregnancies occurring in the undeveloped horn; after the removal of the tube and ovary on this side, she had a full-term child.

At St. Luke's Hospital I was told that some months ago, Dr. Skeel divided the septum some time before confinement for a patient with a double vagina. A similar case is said to have occurred at the German Hospital a short time since in the practice of Dr. Hall.

The late Dr. Aldrich also told me of an interesting case of a cyst of the lateral wall of the vagina, which proved on more careful examination to be a case of double vagina, with stenosis of the external os of the small vagina.

In the course of three months, during the first part of this year, one general practitioner referred to me two cases of double uterus and vagina. One of these, in which I performed a Cesarean section, furnishes the basis of this paper; but I wish, before taking up that portion of my theme, to note briefly the other case brought to me by Dr. Garvin, as I believe some suggestions relating to the recognition of double uterus and vagina may be found therein.

Case of Double Uterus and Vagina.—Mrs. B., referred to me by Dr. Garvin for chronic appendicitis, retroflexed uterus, endometritis, etc. Age, thirty-five. A medium-sized woman, has always been in good health until last summer, when she had a miscarriage at the fourth month. She is the mother of two healthy children—one ten, the other five years old. At the first confinement she was waited upon by a midwife. The labor was long and hard but terminated spontaneously; it was followed by a profuse hemorrhage. Convalesence was slow. At the patient's request the midwife made a careful examination and reported that there was no tear whatever. Dr. Garvin attended her during the second confinement. He reported a labor of moderate severity, which was delayed by a band stretched in front of the head. This was pushed to one side and the labor terminated spontaneously.

Nothing of moment was discovered outside of the pelvis, except a well-marked hyperplastic appendicitis. A pelvic examination showed that the body of the uterus was in a second degree of retroflexion, considerably larger than normal, being some 5 inches in its lateral measurement, and nodular in outline. The ovaries were enlarged and movable. The perineum was only a skin perineum, there being apparently a tear extending upward

on the left side of the vagina. On making a vaginal examination, a large, firm band was found, extending from the anterior wall of the cervix to the posterior wall of the vagina, 3/4 inch wide and 1 inch or more long, with a slit in the center of it.

Under surgical anesthesia it was easy to demonstrate two scars extending upward from the introitus vaginæ to the band previously mentioned, one on the posterior vaginal wall and one on the anterior. The scar on the anterior wall was slightly elevated. On grasping this with the forceps and making traction, it was easily brought down to the posterior scar, from which it had been originally torn, thus restoring the former condition and demonstrating that there were two vaginæ, of which the left was the smaller. The rugæ of the vagina also furnished corroborative evidence, those of the right side being much larger than the left, and continuous with those on the anterior wall of the vagina; while the rugæ of the left side were interrupted at the perpendicular scars.

The cervix was elongated laterally, but the edges were smooth and unbroken, although on palpation there was the feel of a slight laceration. The os was 1/2 inch in length, elliptical in shape, with the convexity directed forward, due to the fact that the cervical septum had been torn from the anterior cervical wall, and had partially retracted into the posterior wall of the cervix.

The manner in which the septal tears occurred furnishes a good illustration of the direction in which the forces of labor act in the planes of the pelvis. In the body of the uterus the septum tears in the middle, in the cervix the septum is torn from the anterior wall, but in the vagina from the posterior.

On exploring the cavity of the uterus, the probe, after being carried straight in for 3 inches, could be diverted laterally either to the left or right, to as much as an angle of forty-five degrees from the perpendicular axis of the uterus, and could be carried to a distance of 4 inches on the right side, and 4 1/2 inches on the left. There was no septum present, as the probe could be swept from one side to the other, without obstruction. This demonstrated that the cavity of the uterus was of normal dimensions, from the front backward, but very much increased from side to side. From this examination it seems to me quite evident that there had been originally a corporeal septum that had been torn through, thus throwing the two uterine cavities

into one large cavity. Later, when the abdomen was opened, it was again demonstrated that the uterus was but slightly larger than normal, from before back; but it was 5 inches across the fundus from one tube to the other, while on the fundus there was a marked depression with a median raphe.

The operation consisted of an ablation of the appendix, a resection of the cystic ovaries, a myomectomy of the small fibroid on the anterior of the uterus, a dilating and cureting and a Tait's perineorrhaphy. The patient recovered.

The special dangers of the double uterus are: Multiple pregnancies, with their attendant dangers and sequelæ, among the 330 cases there were twins thirty-nine times and triplets twice; also ten cases of rupture; for with a double uterus the danger of rupture is greatly increased, especially since one uterus is frequently undeveloped. Where the two uteri are more or less widely separated, the other becomes a source of danger when the one is impregnated. Forty per cent. of the very few Cesarean sections reported were for this complication.

The presence of the vaginal septum is not only liable to be a hindrance to coitus, as reported by Goodell, but, at the time of labor, it is frequently the cause of great delay or more serious consequences. Lane, Baird, Culpin, Milligan and others report cases in which it was necessary to cut the obstructing band caused by the vaginal septum, while Hadley reports a case of pregnancy in the right uterus, rupture of the septum and delivery through the left vagina. When a vaginal septum is discovered prior to the onset of labor, it should be divided; if it is not discovered until the actual confinement, it will be an added reason for resorting to Cesarean section should there be serious delay to the oncoming head. In view of the frequency of protracted labor caused by the septum, and of such serious complications as severe hemorrhage, extensive laceration, puerperal sepsis and rupture of the uterus revealed in the literature, we are led to believe that our literature of the future will show an increasing resort to Cesarean section early, in cases of double uterus and vagina.

This brings us to the subject of Cesarean section and double pelvic generative organs. I find in the literature ten of these operations performed upon double uteri, but in only three of the cases was the vagina also reduplicated.

The first of the three was reported by Lyle in 1904. Patient, thirty-one years old, three abortions followed by prolapse.

Cesarean section at full term, because of complete obstruction of the pregnant uterus by the other half which was fibromatous. Double uterus and vagina present; operation completed by supravaginal amputation; both mother and child did well.

The same year Johnson reports a similar case of double uterus and double vagina. After four abortions and two destructive operations at full term, a Cesarean section of the right uterus at full term was performed with a hysteromyomectomy of the left.

Early this year Benthin reported the third case: A young woman, twenty-two years of age, was treated for retroflexion of uterus in 1910, when it was found that she had a double uterus and vagina. A year later, at confinement, transperitoneal Cesarean section was done, with the patient's complete recovery.

To these three cases of Cesarean section in double uterus and double vagina I wish to add a case occurring in my practice.

Case of Cesarean Section in Double Uterus and Double Vagina.—Mrs. A. Referred by Dr. Garvin. Age, thirty-two years. Primipara. Usually in good health, was exceptionally well while pregnant. She has two brothers, aged forty and twenty-four years; four sisters age twenty-nine, twenty-seven, twenty and eighteen years. Two sisters died, one at ten years, of rheumatism of the heart, and one at four years of scarlet fever. The older brother has three children; the two older sisters have two children each; the two younger sisters are unmarried. No abnormality of any kind has been known to exist in the family. She menstruated first at sixteen and one-half years; always had a moderate dysmenorrhea, was never very regular, never ahead of time, usually late a week or more, menstrual period preceded by a week of pain. She had no idea that there was an abnormality of development such as was discovered by Dr. Garvin at the time of the confinement.

Labor pain began December 31, 1911, and the water broke after some twelve hours of pain; following this, for a period of three days the pains were only moderate, but on January 3, at 2 P. M., they became severe and continued so until the evening of that day. Dr. Garvin discovered a septum in the vagina, with a cervix on each side of the septum, the pregnancy being on the left side. No progress was made in labor. I was called in consultation at 5 P. M.; at this time the pains were very severe, so much so that we feared uterine rupture.

On examination the os was found to be undilated, although it easily admitted the finger; the head was high, but firmly im-

pacted in the pelvis; the bladder distended, and we were unable to catheterize, so firmly was the head impacted. The pelvic measurements were those of an equilibreo justo minor with a conjugata vera of about 9 cm. Her temperature and pulse were normal. The fetal heartbeats and motions were vigorous.

An immediate operation was decided upon, and the patient was removed to the German Hospital. When she was thoroughly anesthetized, catheterization was again attempted, but in vain. The technic of the high Cesarean section was now carried out. On incising the uterus, it was found we had placed the incision over the middle of the placenta; this seemed to make no especial difference, as the child was crying lustily within ten minutes.

After removing the placenta and membranes carefully, examination proved that the uterus was double, with a rupture of the septum between the two cavities. This rupture occurred at the thinnest place, in the middle of the septum; even here it was a quarter of an inch thick. Through this rupture the false decidua were removed from the right uterine cavity, the fetus occupying the cavity on the left. The tubes were normally implanted, one at either side of the fundus. There was no cleft in the uterus itself, but a raphe running the entire length of the uterus was plainly discernible upon the surface.

At the close of the operation there was no difficulty in catheterizing the patient. On the second day after, she had an acute dilatation of the stomach, but no rise of temperature. A bacteriological examination of the uterine discharge taken from the region of the cervix, showed a mixed infection of the staphylococcus and colon bacillus, with a preponderance of the colon bacillus. Following gastric lavage and an injection of the mixed vaccine, relief was immediate, and convalescence uneventful.

Prior to her leaving the hospital, careful examination was made to ascertain postoperative conditions: the cervix on the right side presented the features of an unimpregnated cervix; the one on the left corresponded to an ordinary cervix two weeks after delivery; it was considerably larger than the cervix on the right, somewhat dilated, and in it was a very small lateral tear. The left vagina was possibly a trifle larger than the right, though not much. Both cervices lay comparatively close to the median partition.

On the fourteenth day following the laparotomy, mother and child went home in the best of condition.

These cases just reported are instructive, not only because of their anatomical rarety and developmental interest, but because they emphasize the fact, that the especial dangers of the double uterus and vagina can be largely overcome by a careful study of the case, and skilful application of really modern, surgical obstetrics.

CITIZEN'S BUILDING.

ACUTE DILATATION OF THE STOMACH FOLLOWING CESAREAN SECTION.

BY

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Mrs. Sarah S., Russian, age twenty-seven, ii-para, confinement No. 12249, applied on December 7, 1907, at the Lying-In Hospital for care during her pregnancy and confinement. She gave a history of having been confined in 1905 by a private physician who performed craniotomy on her first child and she stated that she was a little more than six months pregnant for the second time at the date of her application.

Examination showed a healthy woman, erect in attitude; height 4 feet 4 inches; weight 160 pounds. No abnormality was found in either heart or lungs. There was no edema and there were no varicose veins in the lower extremities or external genitals. Measuring from the symphysis pubis upward, the uterine fundus was 22 cm., the umbilicus 25 cm., and the tip of the ensiform 43 cm. The circumference of the pelvis was 102 cm. Between the anterior spines the measurement was 24 cm., between the crests, 28 cm. The external diagonal conjugate was 19 cm., the right oblique diameter 23 cm., and left oblique 22.5 cm. The depth of the symphysis was 5 cm. The bony outlet of the pelvis was of medium dimensions. There was an old laceration through the perineum into the rectum and a relaxed vagina. In the cervix there was a clean-cut bilateral laceration almost up to the internal os. The examiner reported that the patient was so sensitive that he was unable to measure the internal diagonal conjugate. The abdomen was slightly pendulous and very fat, so that little could be learned of the presence or position of the fetus by examination through the abdominal wall and the fetal heart and other murmurs were not heard. Urinalysis revealed no abnormality. This patient went to her home and was lost trace of until March 31, 1908, when she was admitted to the writer's service. She stated that her pains began about 4 o'clock that morning at intervals of about one-half hour, gradually increasing in force and frequency until they were about ten minutes apart. The fetal head was in the right hypochon-

drium, dorsal plane to the left and the fetal heart was 140 and could be heard over the entire left side of the abdomen. There was no engagement of the presenting breech. The external os was obliterated by the old lacerations and the internal os was high up, rigid and would barely admit one finger. The membranes were intact. Five hours after admission uterine contractions had become more forcible and frequent, yet labor had not progressed. As the various examinations had been unsatisfactory, the patient was placed under complete chloroform anesthesia without difficulty and the writer and other examiners found the plane of the symphysis almost vertical, with a well-marked ridge or exostosis back of it. The pubic arch was moderately broad and the front of the sacrum instead of being curved, was straight at its upper end and presented a sharp angle at its lower part with the tip of the sacrum and coccyx coming abruptly forward. The ischial spines were long and convergent. The promontory was high and jutted sharply forward. The side walls of the pelvis approached the midline and the internal diagonal conjugate was 10.5 cm. The true conjugate was so shortened by this promontory, the position of the symphysis and the exostosis back of it and the pelvic inlet so generally contracted that it was impossible to force the presenting breech to engage. The internal os was still a little more than one finger dilated, not dilatable, and dense scar tissue could be felt extending out from it on either side. The membranes were intact, thick and adherent as far as the examining finger could reach. The patient and fetus were still in good condition and immediate Cesarean section was decided upon and performed as soon as the necessary preparations could be made, by the small median incision above the umbilicus. During these preparations, the patient came out from her chloroform narcosis without being any the worse for it. Upon opening the uterus the placenta was found spread out under the wound over the anterior internal surface. It was torn through and the child delivered by internal podalic version and breech extraction after the Smellie-Veit method. The placenta and membranes were removed with some difficulty; the latter was adherent and came away piecemeal. During this time, there was considerable though not serious hemorrhage and the uterus was somewhat relaxed. The patient grew cyanotic and the pulse became feeble and rapid. Ergot was injected deep into the muscles, she was stimulated and responded fairly well to stimulation.

A sterile towel was packed into the uterus, being gradually removed as the deep layer of sutures was placed and tied, so that hemorrhage was held well in check and was practically absent when the first layer of sutures was in place. The latter was buried by a continuous Lembert suture and the uterus, well contracted, took its place in the lower abdomen. The pads used to wall back intestines were removed and as preparation was being made to close the abdominal wound, the stomach, which had not been visible before, suddenly appeared under the abdominal opening, with very much dilated and engorged vessels, and so large that it occupied nearly the entire upper part of the abdominal cavity. The patient's condition was alarming and the house surgeon at once attempted to wash out the stomach by passing a tube through the nostril, but failed to remove any stomach contents or to diminish the size of that organ. In the meantime, the abdomen was quickly closed in three layers and the dressing held in place by a snuggly fitting many-tailed bandage. After stimulation, and the cessation of the anesthetic, the patient's condition became better and she was removed to the ward. About twenty minutes later, she became suddenly worse, respiration ceased and could not be started again artificially, though the heart kept on beating a few minutes more, when the patient died. The child lived and was discharged from the Hospital in good condition ten days later. Though a breech presentation with membranes intact and plenty of liquor amnii present, the right side of the head over the parietal region was much compressed and flattened.

There was nothing in the operation itself which should have placed this woman in her perilous condition. It is our present belief that Cesarean section should have been performed hours earlier. The anesthesia was exceptionally badly taken and there was a lack of skill in its administration throughout the operation which we believe had much to do with the final outcome. Ether was changed for chloroform and then back to ether repeatedly, and profound narcosis with stertorous breathing and cyanosis alternated at short intervals with partial anesthesia and great activity of the patient which tended to the embarrassment of the operator and added materially to the difficulty and duration of the operation. We believe that the foregoing conditions were largely chargeable to the crudely conducted anesthesia in the hands of an untrained interne, plus a capital operation, but an operation which of itself has

never proved immediately fatal in our experience. We consider this a specific though exaggerated instance of the danger of entrusting the giving of anesthetics to internes who have had little or no training in this very important part of an operation. Whatever the legal status of the trained nurse as anesthetist in various surgical clinics is or in the future may become, we are glad to be able to state that troubles with anesthesia have ceased in the Lying-In Hospital since the plan of giving ether by the open drop method by a specially trained nurse has been adopted. At the time of this operation, acute dilatation of the stomach was a new experience for the writer and he has not met with the condition since.

Mathieu states that this syndrome is brought about by the swallowing of air which dilates the stomach and upper part of the duodenum to a point where the duodenum is crossed and, in these cases compressed, by the mesenteric artery. Here the dilatation stops abruptly. The distention may be great enough to also close the cardiac orifice of the stomach. The condition arises not only during surgical operations but in purely medical cases and he states that it has been observed in three cases of eclampsia, in convalescents from typhoid fever, cases where exclusive medical measures had been applied, and no anesthetics used. In our own case, the patient had been in very active ineffectual labor from six to eight hours prior to operation. There was no descent of the fetus into the pelvis. The fetal head rested in the region of the duodenum. After delivery it was found to have been compressed on its right side, the side which was posterior. It is probable that some of the pressure which brought about the flattening of the fetal head was exerted upon neighboring structures and the point of pressure did not change as it does in the gradual descent of the fetus into the pelvis in a labor which is progressing. The patient was profoundly narcotized with ether and chloroform and then allowed to come out from her anesthesia enough so that she was very active. This process was repeated several times and in the active intervals she very probably swallowed large quantities of air and mucus. Her resistance was lowered by prolonged labor, by pressure of the hard fetal head in one position, by the operation and especially by the anesthetics. It is our belief that the syndrome of acute dilatation of the stomach would not have occurred had the anesthesia been skilfully conducted. Having in mind the fact that the cardiac

orifice of the stomach may be closed in acute dilatation there is some doubt whether the stomach tube ever passed that point in this case, although it was in the hands of an unusually well-trained and competent house surgeon. But the distention of the stomach was in no way diminished. In the eight cases noted by Mathieu in which laparotomy and incision of the dilated stomach was performed, the patients all died. In our own case, in which the abdomen was already open and the stomach tube had failed, gastrotomy would have at least removed the distention of the stomach and might have given relief enough to allow the patient to recover even though the toxic or other causes underlying this condition were not immediately removed.

42 East Thirty-fifth Street.

ACUTE DILATATION OF THE STOMACH.

Report of a Case following Cesarean Section.

BY

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(With Chart, 4 Sections.)

Acute dilatation of the stomach is associated with a great variety of conditions. It not infrequently follows operative procedures but occurs more frequently in nonsurgical conditions. In an analysis by Laffer of 217 reported cases, it followed an operation in ninety-seven cases only, or in 38.2 per cent of all cases. In a quite careful survey of the literature I have been able to learn of but four other cases following Cesarean section so that I have felt justified in reporting a case together with a few remarks upon the condition in general.

Report of Case.—The subject was a young colored girl seventeen years old, illegitimately pregnant at term. She was admitted to the Magee Hospital on Febuary 19, 1912, four days prior to her delivery by Cesarean section on February 23. The following data were secured at the time of her admission:

She is 5 feet 3 inches tall and weighs 100 pounds. With the exception of measles she had none of the diseases of childhood. Menstruation which began in her fourteenth year has always been regular, recurring every twenty-eight days, always profuse, has lasted five days and not painful. She is uncertain as to the date of her last menstruation and does not recall the date of quickening. Her pregnancy has been uneventful; she has had no nausea or vomiting; her appetite and digestion have been good and her bowels regular. She has, however, not increased in weight.

Physical Examination.—Thyroid slightly enlarged, heart and lungs normal, liver and spleen not enlarged. There is no edema or varicosities. Nutrition is poor and there are present the usual marks of rickets occurring during childhood, saber shins, curved femurs, rachitic rosary, prominent frontal and parietal eminences, etc. There is also present a moderate lateral curvature of the lumbar spine to the right.

The abdomen is more or less globular in shape, is quite pendulous, the abdominal walls contain little subcutaneous fat, are very tense and the umbilicus protrudes. The uterus lies in the median line with its fundus the breadth of three fingers below the ensiform. The fetus occupies the right occipito-anterior position of a vertex presentation and the head which is well flexed is dipping into the superior strait. The fetal heart sounds are best heard in the right lower quadrant, number 124 per minute and are of excellent quality.

Pelvic Measurements.—The interspinous and intercristate diameters are equal and measure 23 cm. each; the bitrochanteric diameter is 27 cm.; the right oblique 20 cm.; the left oblique 20.5 cm.; external conjugate 16 cm.; diagonal conjugate 10 cm.; true conjugate estimated at 8 cm. The outlet measurements are: transverse 8 cm.; anteroposterior 10 cm.; anterior sagittal 5 cm.; posterior sagittal 7 cm.; subpubic angle estimated at between 80 and 85 degrees. The sacrum is flat, the ischial spines are prominent and the coccyx which is directed with its tip markedly anterior, is freely movable. The introitus and vagina are very narrow and the cervix is nulliparous in character with the external os closed.

The diagnosis of a generally contracted, flat rachitic pelvis was made. As it was thought that Cesarean section or pubiotomy might become necessary, instructions were given that no vaginal examinations be made without special permission after the onset of labor. It was, however, considered not unlikely that the patient would deliver herself so that it was decided to let her make a reasonable attempt before interfering.

Labor began at 5 A. M., February 23, but the patient did not report the fact until 9.15 A. M. and in the meantime ate a hearty breakfast. Until 1 P. M. the pains recurred regularly every three to five minutes, were of very good quality and lasted from forty to sixty seconds. The fetal heart sounds were strong and regular and numbered 136 per minute. Vaginal examination at this time showed the cervix fully dilated but not retracted, the membranes were unruptured and with each pain bulged almost to the pelvic floor. The head was still unengaged, there was no moulding and the anterior parietal bone was overriding the symphysis, there being a marked presentation of the posterior parietal bone. As it was now evident that operative interference would be necessary, Cesarean section was decided upon and performed in the usual manner, the uterus being delivered from

the abdomen before being incised. The operation was easy but somewhat prolonged because of difficulty in resuscitating the baby which had to be taken over after a time by my first assistant, leaving me with insufficient help. Ether was the anesthetic used. The patient was returned to the ward in good condition about 3.30 P. M. with a pulse of 120 and temperature 98.2° F.

Three hours after the operation the temperature was normal and the pulse 90. At 10 P. M. the pulse and temperature were each 100. Up until this time there had been no nausea or vomiting. The abdomen was soft but now considerably distended. The temperature and pulse gradually rose until at 3.30 P. M. February 24, or twenty-four hours after the operation, the temperature was 103°F. and the pulse 140. There was marked abdominal distention but there was no tenderness or rigidity. An enema was followed by the expulsion of a small amount of gas but no fecal matter.

The patient unfortunately had a slight bronchitis before the operation which was much exaggerated by the anesthetic. She coughed a great deal and as moist râles were heard over the apex of each lung, pneumonia was feared. The lung condition, however, cleared up nicely at the end of twenty-four hours but the cough persisted for a number of days causing the patient much discomfort and taxing her strength. The abdominal distention was not relieved and rapidly increased until 9 P. M. February 24, or twenty-nine and one-half hours after the operation. At this time the temperature had risen to 103.4°F. and the pulse to 148 and very weak. Peritonitis was feared on account of the rise in temperature, rapid weak pulse, great abdominal distention and the apparently total absence of peristalsis. As stated, pneumonia was suspected and acute dilatation of the stomach was considered possible. The stomach tube was passed and an enormous amount of gas was expelled together with somewhat more than a pint of a light brown fluid with a foul odor. The distention promptly disappeared and the patient was much relieved and improved. It should be stated that twice during the day (Feb. 24) the patient regurgitated small amounts of fluid, not over an ounce or two, at 2 and 7 P. M., the latter therefore just two hours prior to the passage of the tube for the first time. During the next twenty-four hours the stomach was washed out three times. A large amount of gas and a half pint of dark-green fluid, with a very offensive odor, was obtained

each time. The patient was seriously ill during the next three days, during which time gastric lavage was done every three hours. There seemed to be no improvement, the temperature ranged between 100° and 103° and the pulse between 120 and 150.

Following each lavage the abdomen was soft, there was never at any time tenderness or rigidity anywhere in the abdomen. Drs. Geo. L. Hays, E. A. Weiss and Clément R. Jones saw the patient with me on several occasions during this time (Feb. 25 to 29) and all were of the opinion that there were no signs of peritonitis but that the case was clearly one of acute gastric dilatation. I mention this because the writers upon this subject are almost all in agreement that the condition is unassociated with a rise in temperature unless complicated by infection and I am aware that this contention will be made in my case.

On February 27, the patient's condition was unchanged and as at each washing the same amount of fluid was secured, 6 to 8 ounces, it was decided to wash out the stomach every two hours instead of every three hours. The general improvement in the patient's condition was very apparent and at the end of forty-eight hours following the institution of the two-hour washings, the stomach was found empty for the first time, on passing the tube. About this time also flatus was expelled freely by the rectum. Peristalsis was now heard with the stethoscope for the first time and thereafter enemas were followed by the expulsion of large amounts of gas. On March 2 and 3, lavage was done at three-hour intervals but the fluid again accumulated in the stomach, regained its dark color and foul odor and there was again considerable rise in temperature associated with a change for the worse in the patient's general condition. The two-hour intervals were resumed and continued for the next ten days. Recovery was rapid and uninterrupted. Lavage was kept up with gradually decreasing intervals from March 14 until March 29 when it was omitted entirely.

During the first twenty-four hours following the operation the patient voided 49 ounces of urine and the smallest amount voided during any twenty-four hours was 16 ounces which was on the third day of the puerperium, during which time she was at her worst. With the establishment of peristalsis, nutritive enemas containing small amounts of panopeptone were given at regular six-hour intervals. On March 10, it was observed for the first time, that the water used during lavage was not all returned and it was evident that some of it was finding its way into the

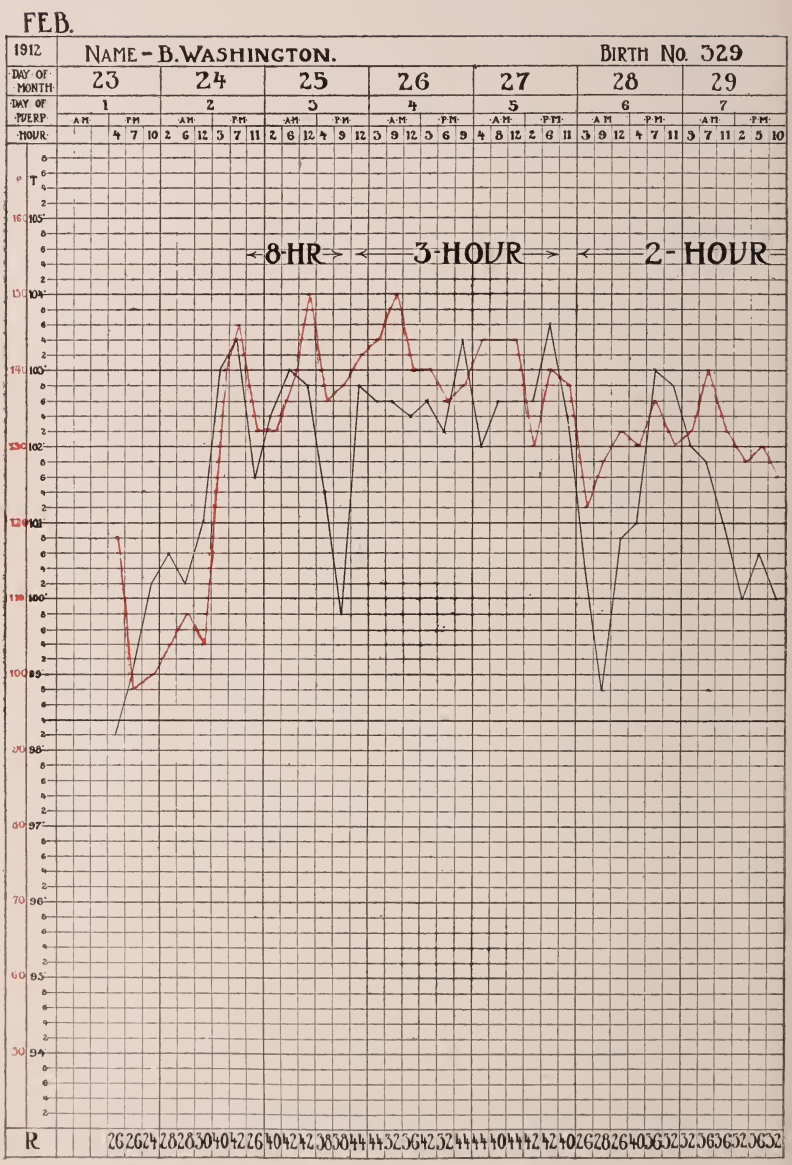
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CHART I.

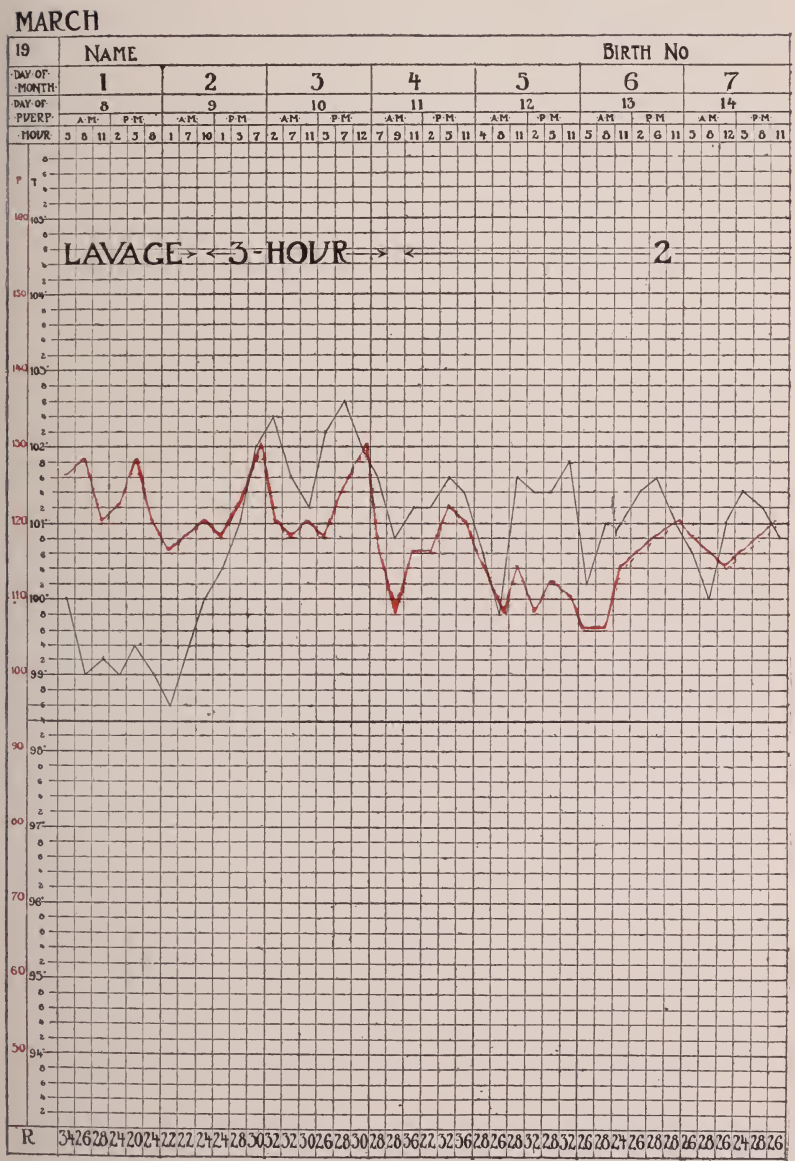
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Chart II.

small intestine. With this discovery, 2 drachms of panopeptone, 2 ounces of water and 5 minims of tincture of nux vomica were put into the stomach through the tube following each lavage and were well borne.

The patient was discharged on April 4 in excellent condition. The baby weighed 6 pounds and 11 ounces at birth and 9 pounds 1 ounce on discharge. It was bottle fed.

Eserine, atropine and strychnia were used freely and in large doses but we were unable at any time to see any diminution in the amount of fluid found in the stomach as the result of their use. It was observed, however, after a time that with each administration of eserine, the pulse became rapid, weak and even irregular, the patient going into collapse. It was discontinued and there was no further trouble. The foot of the bed was elevated to relieve traction upon the mesentery as recommended by a number of authorities. As soon as the diagnosis was made, all fluids were discontinued by mouth and salt solution given freely by the bowel.

In comparing this case with other reported cases, Laffer's exhaustive review of the literature is used as a basis of comparison.

Age.—The patient's age, seventeen years, places her in the third decade in the order of frequency, acute dilatation being most frequent between twenty and thirty, next between thirty and forty and third between ten and twenty.

Time of Onset.—Symptoms first manifested themselves six and one-half hours, after the operation and slowly became aggravated. In reported cases the time of onset varies from immediately after operation to two weeks (Robson's and Smith's cases). In one of Tarbert's cases of Cesarean section the stomach had to be washed out before the abdomen could be closed; in the other, symptoms appeared first on the third day following the operation. In Barnard's case of acute dilatation following Cesarean section, symptoms appeared thirty-six hours after the operation. There seems to be no association between the time of onset and the severity of the symptoms.

Anesthetic.—Straight open ether was administered in this case throughout the operation. It is frequently stated that a general anesthetic is an important etiological factor. Of twenty cases in which the anesthetic is mentioned, it was chloroform in twelve and ether in eight (Laffer). In one case the administration of ether was preceded by nitrous oxide (Herrick). Bloodgood reported a case occurring after repair of a right-sided

inguinal hernia under cocaine. Six months previously this same patient had had a more severe attack following repair of a left-sided inguinal hernia under general anesthesia. Of five obstetrical cases reported, one received a small amount of chloroform during normal delivery. Three others were cases of Cesarean section, in one ether was definitely stated and in the other two it was presumably used. The fifth case, operative delivery for eclampsia, was given chloroform. There may be some connection between anesthesia and the occurrence of acute dilatation of the stomach, but it is not very clear as is evidenced by the fact that the majority of cases occur in patients that have not received an anesthetic.

Predisposing Causes.—Unless there was some connection between the ingestion of a hearty breakfast some seven hours prior to the operation, there were no predisposing gastric factors. There was no history of a chronically dilated stomach nor of any other previous stomach trouble. The patient received but moderate amounts of fluid by mouth after recovering from the anesthetic until the diagnosis was made, after which she received none by mouth. There seems to have been no relationship between the pulmonary and gastric conditions since the latter continued in its severest form for days after all physical signs had disappeared from the lungs.

Symptoms.—Distention, pain, vomiting, thirst and collapse are the most constant symptoms. In my case some of them only were well marked. Pain was never a marked symptom and at most amounted only to moderate discomfort from distention. While well marked, distention never gave a characteristic stomach outline but was always more or less generalized, promptly disappearing on passing the stomach tube. The puerperal uterus very largely filling the lower abdomen may perhaps in part account for this. Vomiting occurred only twice, at seven and two hours prior to the time when the stomach tube was first passed. There were only a few ounces of fluid discharged without effort, the vomiting being regurgitant in type. In 90 per cent. of reported cases, vomiting is noted as a prominent and early symptom. Cases in which vomiting is slight or absent altogether, are usually of the severest type and are easily overlooked. In the two cases following Cesarean section reported by Tarbert, both recovering, one vomited during the operation and the stomach was washed out on the table, the other vomited "large amounts" on the third day and in the case following Cesarean

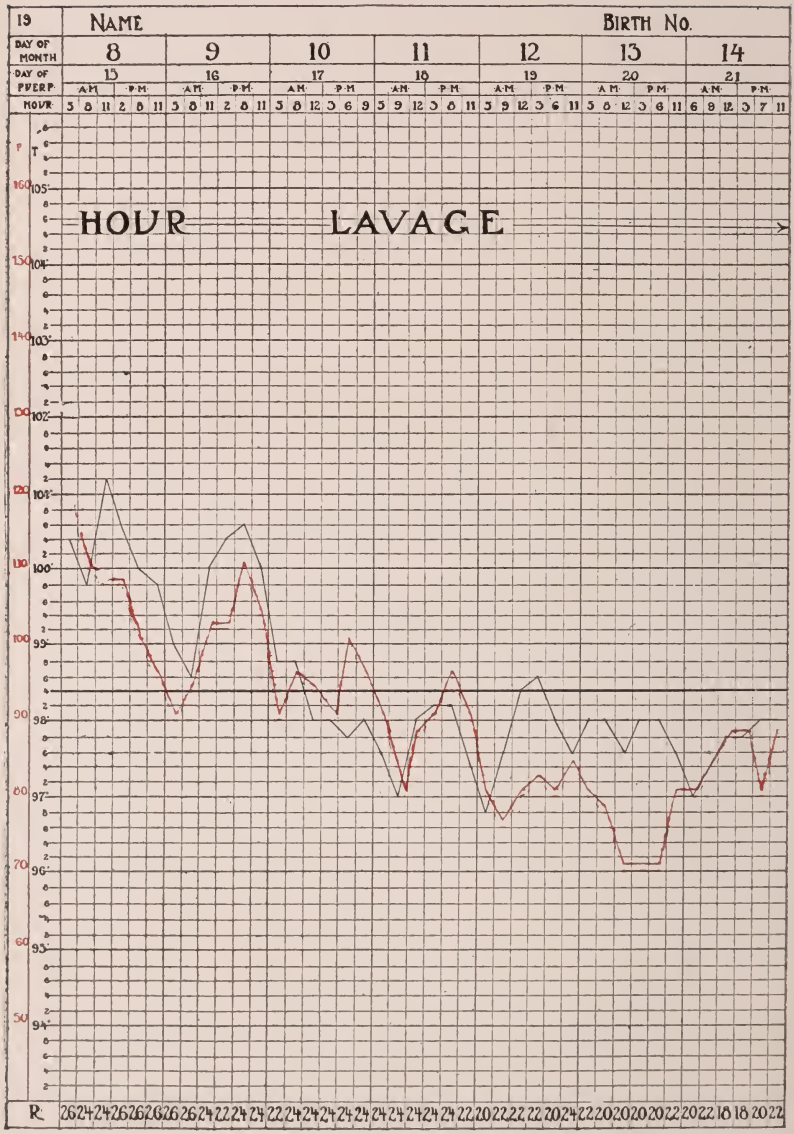
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CHART III.

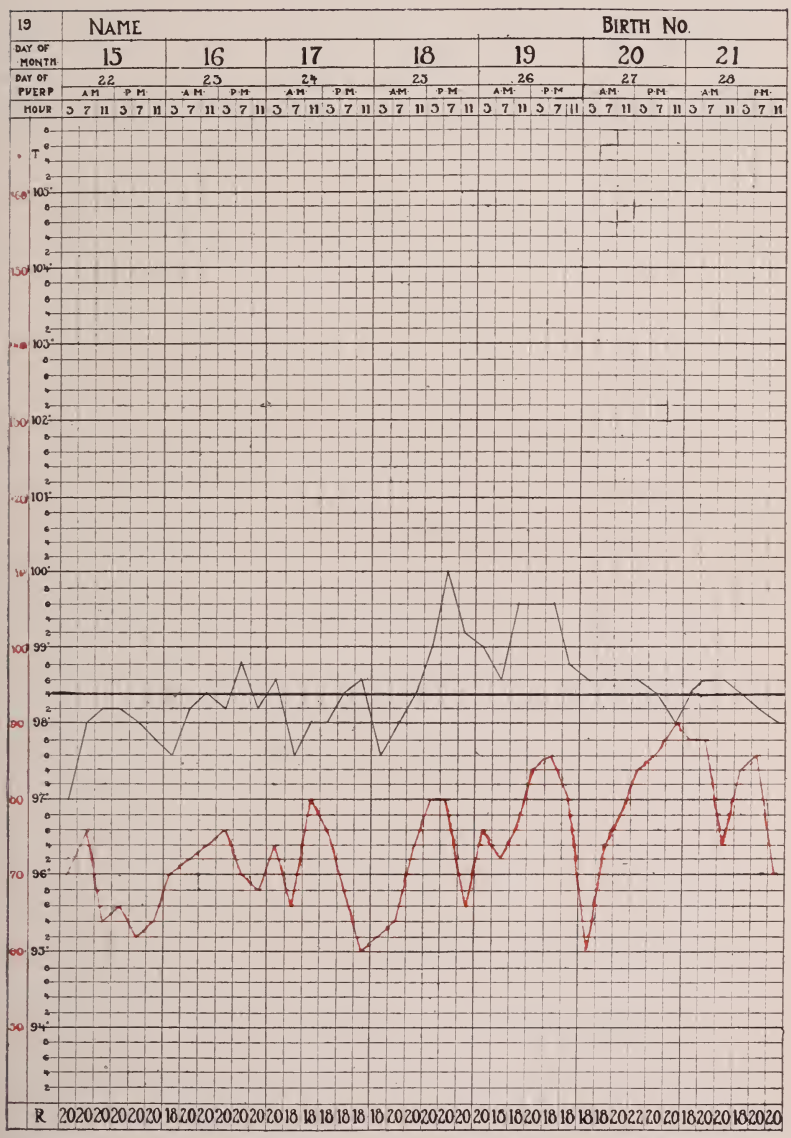
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CHART IV.

section reported by Barnard which terminated fatally, "the patient never vomited."

Tenderness and rigidity were conspicuously absent throughout the entire illness. The pulse varied between 120 and 150, frequently dropping to the former figure after lavage and then gradually rising again. Both the abdominal distention and the toxemia seemed to be causative factors in increasing the pulse rate.

Laffer says that "unless influenced by an associated infection, the temperature is usually normal, but is often subnormal." Conner and various other authors make practically the same statement and it is undoubtedly true in the great majority of instances. However, in the case under discussion reference to the chart would seem to show that the range of temperature was directly affected by the gastric lavage. There was a decided drop in the temperature and it remained at a lower level with the institution of two-hour lavage. This was succeeded by a rise in temperature when the interval was increased from two to three hours and the temperature again fell and gradually returned to normal when two-hour lavage was persistently employed. Whether the temperature curve which I exhibit was an accidental occurrence or not, I of course am unable to say but I do know that a most striking relationship existed between the general condition of the patient and the amount and character of the fluid found in the stomach at the time of lavage. Repeatedly during the third week of the puerperium the interval between washings was lengthened and was each time followed by an accumulation of fluid and a feeling of indisposition on the part of the patient. In my opinion the fever was undoubtedly due to a toxemia. McWilliams, Herrick, A. E. Halstead, Fairchild and Barnard report cases in which there was a rise in temperature apparently not due to anything but the toxemia of acute gastric dilatation. Fairchild states definitely that the temperature rose and fell before and after lavage but no autopsy was obtained to verify the clinical diagnosis. Halstead's case showed no other lesion at autopsy but acute gastric dilatation. Herrick's case was a cholecystectomy and it is possible that some associated condition was the cause of the rise in temperature as no autopsy was obtained. McWilliam's case recovered. An autopsy was obtained on Barnard's case which died seventy-five hours after operation. The temperature ranged between normal and 102.2° F. the pulse between 120 and 164 and the respirations

between 22 and 46. Sections from the uterus and cultures from the uterine wound and abdominal cavity taken at the autopsy, "showed no evidences of inflammatory reaction."

Dyspnea was never alarming but well marked during the time when the patient's condition was critical.

The smallest amount of urine in any twenty-four hours (16 ounces), was on the third day. As the patient received fluid by rectum only this cannot be considered a great diminution.

Visible peristalsis and succussion splash were never observed, although carefully looked for.

Hypersecretion was present as was evidenced by the fact that we always obtained from 6 to 8 ounces of dark green, foul-smelling fluid, in spite of the fact that the patient got nothing by mouth. Lengthening the intervals between the washings resulted in greater accumulation. The fluid maintained the same characteristics throughout and undoubtedly resulted from increased gastric and probably duodenal secretion.

Thirst was never extreme.

Duration of Symptoms.—The continuation of symptoms was not in the nature of a relapse but the result of persistency of the condition through acute, subacute and chronic stages. Lavage was continued from February 24 till March 29 before it was possible to discontinue it entirely or during a period of thirty-four days. During this time the stomach tube was passed over 200 times. Four or five days or less is the usual duration of lavage when the patient is either dead or well on the way to recovery.

Diagnosis.—Peritonitis was excluded as there was no tenderness, rigidity or other evidences of infection except fever, to indicate peritoneal involvement. In addition, when the patient was discharged the uterus was well involuted, freely movable and not adherent, a condition unlikely to follow general peritonitis resulting from Cesarean section. High intestinal obstruction was ruled out by the prolonged illness and the favorable outcome. Obstruction with an onset so violent would have progressed steadily to a fatal termination and a rise in temperature would not have been expected until there was peritonitis. There was never any question as to the possibility of acute pancreatitis, a condition from which it is said to be necessary to differentiate acute dilatation of the stomach.

Variety.—Whether this was a case of arteriomesenteric ileus or uncomplicated acute gastric dilatation, it is of course impossible to say. It hardly seems likely that there would be room

in the pelvis for the intestines as well as the uterus and descent of the small bowel seems to be the determining factor in occlusion of the duodenojejunal junction.

Treatment.—Postural treatment and hypodermic medication appeared useless. The supply of fluid was kept up by rectal and subcutaneous infusion of salt solution. Gastric lavage was the only treatment that caused any amelioration in the symptoms so far as we were able to judge. If there is one thing to be learned in the treatment of this condition from our case, it is that gastric lavage in acute dilatation of the stomach should be repeated at intervals of not less than two hours. My own feeling is that gastrostomy, with continuous irrigation of the stomach, ought to be the ideal treatment and should be given a trial in cases which do not respond to two-hour lavage.

FORBES AND HALKET STREETS.

DISCUSSION ON THE PAPERS OF DRS. BELL, DAVIS AND ZIEGLER.

DR. HERMAN E. HAYD, Buffalo.—I am not going to discuss this subject from the standpoint of Cesarean section, but two of the papers are exceedingly interesting from the point of view of dilatation of the stomach. The experience which Dr. Davis has related is to me very unusual. It seems to me, we cannot put his case into the category of acute gastric dilatation. Unfortunately he did not have the opportunity of making a postmortem examination. I can assume, however, it is possible this woman may have had a dilated stomach previous to her pregnancy, and that this dilatation was in a measure held up and supported by the advancing growing uterus, and just as soon as Dr. Davis emptied the uterus of its contents, together with the profound narcosis to which this woman was subjected, and the large amounts of gas, ether and air which she swallowed, she had simply an acute dilatation of the stomach, as Dr. Davis said, from air dilatation. I cannot imagine any condition of cardiac spasm coming on in a patient who was so deeply narcotized as his patient was, and, therefore, I cannot give any explanation why his house surgeon did not introduce a tube into the woman's stomach, nor can I imagine why a gastroenterostomy would have helped his patient in any way, because I assume she died from ether or chloroform poisoning. This case suggests the importance of advocating the employment of skilled anesthetists in our hospitals. Unfortunately, as surgeons, we are compelled to accept the services of the most untrained and youngest doctors in our hospitals, yet one of the most important duties that the medical man is called upon to perform is the administration of the anesthetic in an operative case. I think we are going to get into trouble before long if we delegate that responsibility to a

nurse. I am not familiar with the laws of other states in this respect, but the laws of New York State are such that if we have a death we are responsible, because no one can give an anesthetic in New York State who is not a regular medical graduate. It seems to me, the medico-legal side of this question is likely to come up at any time.

Dr. Ziegler's case was especially interesting and was a classical one of acute dilatation of the stomach. After a man has had a few of these experiences, the practical side of the treatment of these cases presents itself very acutely, so that in any case upon whom I have operated, if after six hours, vomiting continues following the administration of the anesthetic, and the vomit is of a greenish character, I assume the possibility of an acute gastric dilatation coming on, and I take no chances, but wash out the stomach regularly every four hours. If there are increasing amounts of fluid, as there were in the doctor's case, I would keep up the lavage three or four or six days, if necessary, until all dangerous possibilities have subsided. I am satisfied that with this condition of acute dilatation, the patient being intensely sick, there is an acute toxemia, and the only thing we can do is get to rid of the material that is in the stomach, as quickly as possible, before we allow the pabulum in the stomach to start the fermentative processes. In these cases there is nothing to do except to resort to lavage.

Dr. Francis Reder, St. Louis.—The one subject that has interested me in connection with these papers is that of acute gastric dilatation. Dr. Davis laid considerable stress on the anesthetic, saying that in some cases it was unskillfully administered. Where we have persistent vomiting during the administration of an anesthetic, we have every reason to feel anxious about our patient. Such a condition carries with itself a grave danger on account of the depressing effect it has on the system. After the operation when the patient has taken the anesthetic badly, the stomach should invariably be washed out. Patients, in taking an anesthetic frequently swallow a great deal of the agent, in consequence an abnormal secretion may find its way into the stomach, and if the conditions are favorable, may cause an acute toxemia. If we accept the theory of hormones in connection with this functional disturbance, an acute dilatation could be explained on these grounds. I wish to mention the case of a patient, fifteen years of age, who was smoking a strong cigar it was his first smoke. He swallowed considerable of the smoke and became seriously sick. It was an acute toxemia that caused an acute dilatation of the stomach. For four days the condition was serious. The distention was relieved by frequent stomach lavage.

Dr. Sylvester J. Goodman, Columbus.—In reference to the first paper concerning Cesarean section and sterilization of the woman, we must come to a decision of what to do very much as a celebrated painter did, who, when asked how to mix paints,

replied "With brains." In this connection I wish to refer to a large series of cases in the practice of my colleague Dr. Baldwin, and a small series of my own.

The first case was one in which the skull of the fetus had been crushed by the attending physician some hours before I saw the woman. Her uterus was full of small fibroids. I advised hysterectomy, but the members of the family refused owing to the fact that the child was dead. This woman has again become pregnant, and I expect to do a second Cesarean section on her next month.

In another case that was referred to me the uterus was likewise found full of fibroids. This woman had been delivered once normally. The child was delivered with some difficulty, but the woman recovered nicely. When I saw her in a later pregnancy she was suffering from a detached placenta. She was delivered at the hospital, and at that time I wanted to do Cesarean section and extirpation of the uterus, but she refused. In her case I should have done a hysterectomy, as in the future she may have a serious time.

In another case, a primipara, twenty-five years of age, with a very large child, the measurements were slightly under normal. This was almost as ideal a case as we could have, although several examinations had been made by a careful physician. I did Cesarean section with the high operation, and she died five days later. On postmortem examination we found no infection of the uterus, but the catgut used had gone all to pieces. It was entirely dissolved, even the knots. After some correspondence with the manufacturer, he told us it was thirty-day catgut. He said that if it went through the peritoneum we could not rely on it. It should have had supporting sutures of silk, and we are doing this at the Grant Hospital in the service of Dr. Baldwin and myself. At our hospital we allow no one to give anesthetics except a trained anesthetist. The laws of Ohio forbid anyone exept a registered physician to give anesthetics.

In regard to going through the scar in the second, third, or even fourth Cesarean section, we cut out the scar because it has lost all of its elasticity, and if the woman should have a future pregnancy there is no danger of rupture of the uterus.

Dr. William H. Humiston, Cleveland.—These papers are very interesting, and I feel should be discussed very thoroughly. This Association has no more important function to perform for the rank and file of the profession of the United States than to have more of these obstetric papers published. There is no branch of medicine and surgery in which there is poorer judgment shown than in obstetrics. How many women are there throughout the country who have pelvic measurements made before delivery? We know how important it is that the accoucheur should know the capacity of a woman's pelvis and the size of the fetal head that has to pass through it. When there is a disproportion between the pelvic outlet and the size of the child's

head, then it becomes our duty to consider Cesarean section. Cesarean section in an uncontaminated case is so much safer and surer in its results than the high forceps operation, that I believe the time is coming when the high forceps operation will not be resorted to by the general practitioner, but only by the thoroughly trained men in obstetrics. I think it is one of the most formidable operations, as usually performed, that we have, and requires special knowledge, ability and training. Scarcely a week goes by in my service at the hospital (and I have a continuous service of some size) that women are not brought into the hospital who have lost their child from a high forceps operation. The pelvic floor is torn, and the vagina is torn through to rectum. The cervix is torn to the vaginal junction or through it—a most deplorable condition results. I reported one such case at our last meeting in which a high forceps operation had been done on a dwarf. The child was sacrificed. The patient came under my care for these injuries. She had no control over her urine or feces, and had infection. Later I operated and she made a good recovery, and within six months was again pregnant. I delivered her at the beginning of labor of a healthy child by the high Cesarean operation and her convalescence was rapid; she was out of the hospital on the tenth day.

I wish this Association might have a larger proportion of papers upon obstetric subjects for our future meetings.

The indications for Cesarean section, as I view them, have been greatly widened, and I wish to go upon record as stating that there will be more Cesarean sections performed in the next few years than there have been in the past.

Dr. William Seaman Bainbridge, of New York City, recalled two cases in his own experience that illustrate certain points that may be further emphasized. The first has reference to the question of sterilization; the second concerns acute dilatation of the stomach.

The first case was that of a woman, referred to him about four years ago. There was a history of six pregnancies, with attempts at delivery in each, most of them instrumental, but premature, and with death of the child in each case. The patient had a justominor pelvis, the entire floor of which was torn away. The bladder was opened, and there was a vesicovaginal fistula, as well as a rectovaginal fistula. The necessary repairing was done, and the patient was told that she must not become pregnant again. Despite this advice, she returned a year and some months later pregnant. She was told that it would be necessary to do a Cesarean section, the operation being explained to her. The operation was successfully performed. The husband and the patient, as well as the physician who had referred the case, wanted to have the tubes tied in order to prevent further pregnancies. This was acceded to, the tubes being tied with silk in two places. Unfortunately some time afterward she lost her child from pneumonia, and now is anxious to have the tubes

untied. Dr. Bainbridge considered that one assumes a very great and serious responsibility, even in the exercise of one's best judgment, in taking away from a woman the right to have a living child.

The second case cited had a bearing on the question of acute dilatation of the stomach. According to Dr. Hayd, the only thing that can be done in such cases is to resort to gastric lavage. The speaker thought perhaps something more could be done than ordinary *gastric* lavage. He recalled the case of a woman with extensive carcinoma of the breast, who had consulted him about five years ago. At that time she had bronchitis and was in no condition then for operation. She was sent to the country for a short time. The cancer grew more rapidly, but the bronchitis disappeared, and the patient returned for operation. An expert anesthetist gave the anesthetic. The patient developed an acute postanesthetic pneumonia and dilatation of the stomach. Lavage was employed. After washing out the stomach a great deal of distention below was found. The patient was placed in the extreme Fowler position and away over to the right side; then, after thorough lavage, the contents of the overdistended stomach siphoned out. It was possible thus to diminish the swelling or distention below the stomach. In other words, he was able to siphon out a great deal of the fecal and semifecal material beyond the pylorus, This relieved the patient markedly and, repeated several times, caused the disappearance of the severe symptoms. It was just as important, in the speaker's judgment, to siphon out the material in the intestine as it was to get rid of the material in the stomach itself.

Dr. Bainbridge added a word with reference to the use of glucose, as he had seen it employed by several men in London. It was introduced by rectum or in the saline under the breast, in order to prevent acute dilatation of the stomach and to lessen postoperative shock and postanesthetic vomiting. They added from half an ounce to an ounce of glucose or dextrose to the fluid gaiven by the rectum every three or four hours. The same amount sterilized, was added to the fluid used in hypodermoclysis. Those who employ it believe it reestablishes the glycogenic balance of the liver, which is a factor in the diminished vitality of the muscle wall of the gastric organ, and in the production of shock. Whether this is the explanation or not, they believe the patient gets less postoperative vomiting and dilatation of the stomach when glucose or dextrose is introduced to take the place of that which the liver fails to give to the general system immediately following or a few hours after the operation.

Dr. A. S. Hotaling, Syracuse.—I wish to speak briefly of a complication I met with following Cesarean section, that is, rupture through the scar, and I would like to ask Dr. Davis if he has met with a similar case. The text-books all speak of such a complication, but the cases reported in the literature are very few.

Two years ago, I did a Cesarean section on a girl, seventeen years of age, for eclampsia. She was seven and one-half months pregnant. She had an undilated, unobliterated cervix. At that time she was in the hospital as a ward patient. About a month ago she came into the hospital as a private patient, having been brought in by her physician who thought she was in labor. This was about 9 P. M.; she died shortly after 1 A. M. from hemorrhage. Autopsy the next morning showed rupture of the uterus. The organs were all transposed. The liver was on the left side, the heart on the right, and so on. I might say in this case the uterus was closed with a double row of catgut sutures, and in addition to that there were three supporting silk sutures. The rupture was directly through the old scar.

Dr. Hugo O. Pantzer, Indianapolis.—Bearing on the multiple etiology of gastric dilatation, I wish to report a case that recently came under my observation in support of the position taken by Dr. Davis. In his case the pressure applied to the stomach may have been a factor in producing gastric dilatation. My patient had on a very snugly fitting corset while attending one of our automobile races. She was brought away from there in convulsions. Nothing more nor less was found at fault than an acute dilatation of the stomach brought on by the tight constriction of the abdomen through the corset.

With regard to the mooted advisability of sterilizing a woman, I think it well to hold to the rule of principle. Actions by principle will always in the end tally better than actions governed by opportunistic policy. The man who pursues an opportunistic policy, will come to disaster sooner or later. This is very clearly shown in other fields, notably at this time in politics. Where there is no immediate pressing indication to sterilize, this should not be done.

Dr. Bell (closing).—I have nothing further to say except to thank those gentlemen who have discussed my paper.

Dr. Davis (closing the discussion on his part).—In the matter of delivering the uterus at the time of Cesarean section, we, in the Lying-in Hospital practised that method for a considerable time. It was the best that we could do following the teaching of that time, but we found in observing these cases, that they were in good condition during the early part of the operation, but as soon as we began to deliver the unemptied uterus from the abdomen there was at once evidence of a considerable amount of shock, due to the forcible manipulation and evisceration. It was unnecessary interference. It is unnecessary to remove the uterus from the abdomen. It is a somewhat easier operation to deliver the uterus and empty and suture it outside of the abdomen but in performing Cesarean section we do as little as we are obliged to. We deliver the child, close the wounds and conduct the mother into the condition of a normal puerperium with as little interference and as soon as possible. We are able to do this with a small incision with little handling

of the uterus. Many times we do not see the intestines or tubes, but only the fundus and anterior surface of the uterus come into view. In cases of fibroid tumors and other complications which are not urgent, we do not believe in interfering with them at the time Cesarean section is performed. If there is to be a hysterectomy or myomectomy, or anything of the kind, let it be done later, because after three to six weeks, it can be done much more readily, after involution of the uterus and neighboring structures had taken place and the vascularity is much diminished. It is an altogether safer and more satisfactory time in which to operate.

In regard to measurements of the pelvis and the child, we should by all means measure the pelvis and, in so far as possible, measure the child, but we would be led astray many times if we depended upon these measurements too implicitly. They should be used as an aid to our judgment in determining what is best to do in each case. There are many cases in which the measurements of the pelvis are ample and the child does not appear unduly large, and yet, when the woman is in labor, the fetal head does not engage and labor does not progress. It is better, I believe, where there is evident disproportion between the size of the child and the capacity of the pelvis, regardless of pelvis measurements, to do a Cesarean operation. We may have a case in which the internal diagonal conjugate is 14 centimeters, yet the rest of the pelvis is contracted and the head does not come down, or the head is abnormal and dies not mold and yield to pressure. On the other hand, we meet cases in which the external conjugate is only 17 centimeters. A justominor pelvis in a small thin justominor woman with small bones, the child is also small with bones of the fetal head capable of being readily molded. Many of this type of case go on in labor and either deliver themselves without assistance or they are able to force the fetal head down to the pelvic floor from whence it can be readily delivered with the aid of low forceps. But to depend entirely upon the measurements of either mother or child is not in accordance with our best knowledge of this subject.

I would like to emphasize the importance of determining early whether Cesarean section is to be done. I believe there is a great deal of morbidity which can be avoided, and some mortality, if we operate early before the patient's resistance has been lowered by exhaustion and fatigue intoxication and before the membranes have long been ruptured and many vaginal examinations have been made or attempts at vaginal delivery have been tried. We occasionally see cases of primiparæ continuing long in labor; according to the measurements, labor should not be difficult, and we do not watch them closely enough, and after a number of hours, we wake up to the fact that labor is not progressing. I recall a case in which no examinations were made except with sterile gloves in the hospital.

The membranes had been ruptured for many hours, the cervix

was fully dilated, there was a considerable caput and a portion of the head engaged but there was no further descent. Cesarean section was performed and the patient had a long drawn out recovery. Had this patient been operated upon earlier she would have been one of the ten to fifteen day cases to leave the hospital.

Dr. Darnall.—I would like to ask Dr. Davis whether he had any difficulty or trouble from meconium and amniotic fluid flowing into the abdominal cavity in doing the operation inside the abdomen rather than delivering the uterus.

Dr. Davis.—We pay very little attention to that. It does flow into the abdominal cavity more or less, but we have had very little trouble from that source.

Dr. Hall.—Do you try to mop it out?

Dr. Davis.—Not much. We believe in doing as little injury by sponging or manipulation as possible.

Dr. Hayd.—You want us to understand that if the case has not been tampered with mechanically that the amniotic fluid is sterile?

Dr. Davis.—It is sterile, and we pay very little attention to it. We depend very largely upon the uterus being held up against the abdominal opening by the hands of the assistant externally.

Dr. Werder.—In septic cases you do?

Dr. Davis.—In septic cases we try to avoid it as much as possible by gauze pads, etc. A very small quantity of septic liquor amnii is sufficient to inoculate the whole peritoneal cavity an in these case, we cannot by any means now known to us wholly avoid such inoculation. Such cases are not favorable subjects and we now are less often led to perform this operation upon them. In these septic cases we have a rapid pulse at once after the operation, out of proportion to the temperature and the general appearance of the patient. We have moderate fever which becomes very high before death. Upon opening the abdomen of several of these patients after death, we have not found general peritonitis. The peritoneum is glistening in appearance except in the lower part of the abdomen there were rather sharply defined localized areas which appeared as though some corrosive fluid had been spilled over them. The wounds are covered with a grumous material full of bacteria and there is no attempt at union. We believe that such patients die from an intense systemic intoxication.

Dr. Humiston.—Do you pack off the abdominal cavity around the uterus before you open it?

Dr. Davis.—Formerly I used to place pads all about the uterus, in some cases I have used no pads at all. I now use two or three pads placed above the fundus with the idea of holding the intestines and omentum back in the abdomen, and then depend upon the pressure which the assistant is able to make to hold the uterus against the abdominal opening. The pressure can be kept up continually until the sutures are in place. I

believe that the abrasions of the uterine and parietal peritoneum made by forcing pads in where the abdominal wall fits closely over the distended uterus do more harm than any good that comes from their use.

Dr. Huggins.—Do you remove the uterus?

Dr. Davis.—I never remove the uterus, but in septic cases where we feel that we are in danger of losing the woman from sepsis, I believe that a free wide open incision below the umbilicus and packing well around the uterus and doing a supravaginal hysterectomy, removing the child quickly from the uterus after it has been amputated and delivered from abdomen and closing over the stump with peritoneum is an ideal way of operating. I have had no experience with this procedure, but I think it is the thing to do, providing that we perform Cesarean section at all upon evidently septic cases. Dr. Bainbridge has called attention to a point which I did not touch upon in my paper.

That is, a large number of difficult and complicated obstetrical patients eventually gravitate to the Lying-in services in hospitals, so that the percentage of such cases in hospital practice is relatively higher than it is in the community at large. Patients come to us with the histories of two, three, four or more pregnancies with operative vaginal deliveries and either stillbirth or children who live but a few hours because of the injuries they have been subjected to in every case. Let us stop for a moment and think what these women have endured. They have spent eighteen to thirty-six or more months in the discomfort and dangers and hopes and fears of pregnancy, to repeated operative deliveries, to dangers and permanent injuries, many of us here can appreciate how great, and with all this, to the repeated disappointment of not having a living child. We can offer such women something better to-day. We can deliver them with very little danger by abdominal Cesarean section, they have not been subjected to long labor and contaminating vaginal interference and we can almost without exception give them a living child if the child is well developed and healthy at the time of operation.

The question as to rupture of the uterus in labors subsequent to one or more Cesarean deliveries has been raised. In this series of 147 Cesarean deliveries, twenty-six patients were thus delivered more than once and in this latter number rupture of the uterus occurred twice, but in cases who had not taken the precautions for even an ordinary delivery. In only one case had the uterine scar given way and that for only about 3 centimeters of its length, so that, while the danger is one which we must recognize, it is not very great. I have used chromic catgut in the uterine wound for nearly all of my cases and never have seen it give way. In the matter of repeated Cesarean sections, in the early spring of this year, Dr. Harrar, of the Attending Staff, made a rather exhaustive study of this subject and presented his results in a paper before the New York Academy of Medicine (Amer. Jour. Obst., May, 1912). In it he brought out a point

which had not occurred to me: that, if there are two or more lines of scar tissue side by side in the uterus, the short muscle fibers between them are weak and more liable to give way under the strain of labor. In our cases it had not been the practice to dissect the cicatrix out either in the abdomen or the uterus. We have cut directly through it each time. Sometimes we are not able to find any uterine scar.

Dr. Zinke.—I would like to ask a question. When you operate on a case in which you use silk sutures, in performing Cesarean section, no matter whether it be the second, third, fourth or fifth time, do you find any evidence of the silk sutures?

Dr. Davis.—In our early experience we were all using silk sutures, and, so far as I am aware none of these cases have come to us for subsequent Cesarean section; I never have found evidence of silk sutures in the uterine wound in any case, but in the case which I have described the patient did not come under my care for the second Cesarean section. Following her operation she did not menstruate for a year and a half and she grew very stout. About a year after her delivery she developed an inflamed area in the abdominal scar which later broke down as a sinus. Soon after this she entered a hospital, the sinus was opened and a silk suture was removed, and the sinus closed. Later she became pregnant and, I understand, placed herself in the care of an obstetrician who promised her that it was not necessary for her to be delivered by Cesarean section, that by inducing premature labor she would be given a living child without the dangers of Cesarean section. Induction of labor was attempted and after a good deal of vaginal manipulation had been indulged in, she was delivered by a second Cesarean section, followed a few days later by hysterectomy and death from sepsis. Pelvic measurements do not always bring out the capacity of the pelvis. We may have a very high promontory and in some cases a jutting forward of the lumbar vertebræ in such a way that the head will not enter the pelvic brim, although it should do this according to the measurements.

Dr. Charles Edward Ziegler, Pittsburgh, (closing the discussion).—We tried the effect of change in posture upon lavage but were unable to get better results than with the patient in the dorsal position.

As to the value of pelvic mensuration, to which reference has been made, I wish to say that it is of relative value only. There are many factors to be considered. Of course, no one ever attempts to say definitely that a baby will or will not pass through the pelvis in certain border-line cases. But it is precisely in this class of cases that pelvic measurements may be of distinct value if we depend, not upon the external measurements alone which are usually of little value, but upon the internal measurements. I have seen numbers of cases where spontaneous labor took place through pelves of the size and type I have described. As there was in my case, no moulding or caput formation,

nothing to indicate injury to either the fetal or maternal tissues and no chance of infection, we have had no reason to regret giving the patient the test of labor before interfering. In my opinion, Cesarean section is done many times unnecessarily. A maternal mortality of 11 per cent. is not low for the operation. The test of labor judiciously applied and the premature induction of labor in selected cases, will make Cesarean section unnecessary in the vast majority of cases. Craniotomy in infected cases, in which the child is dead or dying or its condition doubtful, is the operation of choice. In a pelvis not absolutely contracted, Cesarean section when the baby is dead, is never justifiable and is always followed by a high mortality. Craniotomy in such cases has a very low maternal mortality. I have never lost a case.

As to the incision of the uterus before delivering it, there can be no comparision with incision after delivery. Hirst of Philadelphia, who has had a very extensive experience with Cesarean section, always delivers the uterus before incising it. He has had 127 consecutive sections, with six maternal deaths only, a mortality of about 4 3/4 per cent. There can be no question but that the peritoneal cavity can be better protected against infection by the uterine contents, if the uterus is delivered before incising it. In all cases which have been examined a number of times and especially when attempts at delivery have been made, there is always present the great probability of infection of the uterine cavity. It is a physical impossibility, in such cases, to prevent contamination of the peritoneal cavity, if the uterus is incised *in situ*.

The procedure which I have employed in a limited number of cases, is carried out as follows: An incision large enough to permit delivery of the uterus, is made through the right rectus muscle, with its mid-point on a level with the umbilicus. Before delivering the uterus, four temporary sutures, of heavy silk, are passed through the abdominal walls on either side, from within out, at regular intervals. The lower suture is so placed that, when tied, it will bring the edges of the abdominal wound together close against the posterior surface of the delivered uterus. The sutures are long enough to permit their being slipped up over the fundus while the uterus is being delivered. As soon as the uterus is delivered, the silk sutures are tied from above down, bringing the edges of the abdominal wound together, thus avoiding the necessity of placing pads within the peritoneal cavity or of handling the intestines. The abdominal walls are covered with hot towels, and a large piece of heavy rubber sheeting, with a slit in its center, is next slipped over the uterus which it hugs closely about its lower segment, and is spread out over the abdominal walls. In this way all possibility of fluid entering the abdominal cavity is effectively avoided. The uterus is next incised, the baby and fetal appendages delivered and the uterine wound closed. The lower silk suture is next removed, the uterus

returned to the abdomen and the peritoneum closed from below upward, the silk sutures being removed in order as we go along. Our results have been most gratifying. We have entirely eliminated distention of the bowel which so frequently follows the use of packing and the handling of the bowel. I do not believe that delivery of the uterus before incising it had anything to do with the acute dilatation as has been intimated, since not a case occurred in Hirst's long series.

MECHANISM AND TREATMENT OF PLACENTA PREVIA.

BY

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At the last meeting of the American Medical Association there were read in the Section on Obstetrics and Gynecology several papers which touched more or less on Cesarean section as a justifiable means in the treatment of certain cases of placenta previa, and it appeared from the discussion that many of the members of the Section were of the opinion that placenta previa ought to form an even more frequent indication for Ceserean section than was claimed by the essayists. It was claimed by some that in placenta previa treated by other methods the maternal mortality amounted to from 20 to 30 per cent., and the fetal mortality is several times as great, whereas, if these cases were treated by Cesarean section, the maternal mortality could be reduced to 5 per cent., and the fetal mortality would likewise become much smaller.

The time for discussion was too limited to argue so important a question, and I therefore announced the following contentions:

No form of placenta previa, as such, ever offers a justifiable indication for Cesarean section.

Version after Braxton-Hicks in the presence of a viable child deliberately sacrifices the life of that child and has no place in modern obstetrics.

The cervical and vaginal tampon and the intrauterine use of rubber bags are safe and efficient means for controlling hemorrhage and for securing sufficient dilatation for delivery through the natural passages.

I further announced that I would defend these contentions at this present meeting of the American Association of Obstetricians and Gynecologists at Toledo.

To make things quite plain, let us consider placenta previa from the clinical standpoint only; let us see in what way the mechanism of labor is affected when the placenta is found in the lower pole of the ovum instead of the upper one; let us see what clinical symptoms such disturbed mechanism produces and what the effects of these disturbances are on mother and child.

Next let us consider under what conditions we have met these cases in the past; how we have arrived at a diagnosis, and how much or how little need there has been for prompt action; let us see whether placenta previa is a condition in which an early diagnosis will enable the practitioner to have the case transported to a hospital and placed in the hand of a specialist, or whether it is a condition that requires immediate action whenever it manifests itself, so that the majority of cases must be handled by the practitioner away from medical centers.

By the mechanism of the first stage of labor that portion of the parturient canal which is composed of the lower segment of the uterus and of the cervix, is dilated and stretched until it forms a cylindrical passageway of about 12 centimeters in diameter, and of about three times its original length. The upper boundary of this passageway is formed by the contraction ring, the lower boundary is formed by the margin of the external os. This dilatation and stretching is accomplished by the contractions of the muscular fibers of the uterine body above the lower segment. When these fibers contract the space which they enclose must become smaller and the contents of the uterine cavity must either be compressed or they must move in part out of the contracting area. For practical purposes the ovum is not a compressible body; therefore, when the uterine cavity above the lower margin of the contracting zone becomes smaller, the space lost must be made up below that zone in the lower segment of the uterus, and this is what happens: The lower segment is stretched until the space it encloses is much increased; this stretching causes a detachment of the lower pole of the ovum from the uterine wall, beginning at the internal os and extending upward in all directions for a distance of several centimeters. The stretching of the lower segment in turn pulls on the margins of the internal mouth of the womb, and causes it to open up. Finally, a diverticle of the membranes descends below the level of the inner os, forming a fluid wedge, which, as it increases in size, gradually stretches the walls of the cervix and dilates the cervical canal until it is large enough for the passage of the child.

Under normal conditions the first stage of labor is completed while the ovum remains in its entirety; the amniotic fluid equalizes the pressure on the fetus and prevents the uterine walls from contracting to a degree which would seriously interfere with the placental circulation.

When the membranes have ruptured prematurely, dilatation

is effected in the same way, but less gently, and with considerable danger to the placental circulation. The downward pressure is no longer exerted on the entire ovum, but on the fetus alone, which now is forced downward while the lower segment and the cervical canal are being stretched over the presenting part.

Uterine contractions take place throughout pregnancy, but usually they are not strong enough to effect any degree of dilatation until pregnancy has advanced to within six or eight weeks from term, when the effect of these contractions is quite evident. During the first half of pregnancy the inner os is always closed, but toward the end of the second half the inner os is found open in the majority of multiparous women, so that many weeks before term the examining finger can be inserted through the internal mouth of the womb, through which the presenting part may be felt covered with the fetal membranes.

In primiparous women I have often found the same condition and in all of them the stretching of the lower segment is considerably advanced long before labor sets in, so that, as a rule, the head is found low in the pelvis and can be plainly palpated. When the placenta is found at the lower pole of the ovum, as it is in the various forms of placenta previa, the same mechanism is set in motion when pregnancy has sufficiently advanced, but as soon as a separation of this lower pole of the ovum from the uterine wall takes place, there is unavoidable hemorrhage; the separation takes place in the decidua serotina, which means that uteroplacental vessels are torn in the detached area and pour out maternal blood.

This hemorrhage occurs in all cases of placenta previa; in some before the fetus is viable, in others after viability has been reached, but while the fetus is still more or less immature and a few cases go to full term before there is any bleeding.

When labor sets in, dilatation of the parturient canal proceeds in the usual way. The bag of waters is formed, but its walls are composed entirely or in part of placental tissue. During each labor pain the ovum is pushed down in its entirety against the lower uterine segment—the force is usually sufficient to compress the torn uterine vessels and to stop the bleeding, but as soon as there is a relaxation of the uterine wall the pressure is removed and there is renewed outpour of blood.

The detachment of the central portion of the placenta in an area of 10 or 12 centimeters diameter does not, as a rule, endanger the life of the fetus in cases of placenta previa, for in these cases

the placenta is much thinner than usual and covers greater space, so that when the external os is fully dilated there remains attached to the uterine wall an outer ring of placenta from 8 to 10 centimeters in width which suffices to carry on the placental respiration until delivery is completed.

Almost without exception every case of placenta previa which I have attended announced itself by a sudden hemorrhage, on account of which I or a fellow practitioner was hurried to the patient. At times the patient had been asleep and in the middle of the night she was found in a pool of blood; at other times she had been attending to household duties or she was away from home when the hemorrhage started.

With few exceptions this hemorrhage was such a severe one as to require immediate attention. This always consisted in removing the clots of blood from the vagina; in making an examination, and in checking the hemorrhage by a tight cervical and vaginal pack, or, if there was sufficient dilatation, in delivering the patient. In some cases there was sufficient dilatation to enable me to introduce a hand, detach the placenta on one side, go up to the feet, turn the child and deliver the woman at once; at other times there was a good bag of waters which consisted in part of placenta and in part of fetal membranes; in some of these cases it sufficed to rupture the membranes, when the head would come down and press the detached portion of the placenta so tightly against the bleeding uterine wall as to stop the hemorrhage; such cases would deliver themselves or were terminated by forceps. At other times the fetus presented crosswise or feet first, which made delivery an easy matter. There remained, however, many cases in which the inner os was only slightly dilated and in a few instances there was no dilatation at all. In these cases with insufficient dilatation cervix and vagina were packed with absorbent cotton squeezed out in some antiseptic solution, or with strips of sterile gauze. After the patient was thus safe for the time being, she was transferred to a hospital or preparations were made to deliver her at home.

It is possible by proper packing to control the hemorrhage absolutely, but the pack has to be so tight that it usually produces labor pains, which in most cases is an advantage. The pack may remain undisturbed for from eight to twelve hours; formerly I renewed the pack several times, but of late years I prefer to introduce a medium-sized Champetier de Ribes bag into the uterus if on removal of the first pack there is not suffi-

cient dilatation. The bag is introduced into the uterus below the placenta so as to leave the ovum in its entirety. By so doing dilatation is accomplished more gently and quickly, and after delivery of the child the placenta comes away with greater ease and completeness. In most cases a dilatation of from 9 to 10 centimeters is sufficient because so many of the babies are premature or undersized.

In February, 1909, I reported the results of this method of treatment of placenta previa.(1) Of fifty mothers, one had died, a maternal mortality of 2 per cent. In May of the same year I reported two more cases of central placenta previa which had reached Washington University Hospital at a time when the cervix barely admitted the finger. Both cases were successfully handled by the vaginal pack and the intrauterine balloon, and were terminated by podalic version.(2)

Since these reports the results of treating placenta previa by this method have remained uniformly good in my hands, and what is still more gratifying is the fact that the same method is successfully employed by general practitioners who have been instructed by me, as is illustrated by the following reports:

Case I. *Central Placenta Previa.*—Dr. Carl Zimmermann, East St. Louis, Illinois.

Mrs. R., thirty-five years old, expected her first baby August 17, 1910 (last menstruation November 10, 1909). At midnight, July 17, 1910, she is seized with a severe hemorrhage; the os uteri barely admits the finger; it is filled out entirely by placental tissue; the hemorrhage is stopped by a tight cervical and vaginal pack; the packing is removed several times until July 20, when there is 3 centimeters dilatation. Nothing but placental tissue can be felt. The placenta is found detached for some distance from the margin of the inner os. Into the space thus formed a colpeurynter is introduced and inflated with 500 c.c. of sterile water. Immediately strong pains set in and in fifteen minutes the bag is born, followed by a gush of blood. The os shows almost complete dilatation and is still filled out entirely by placental tissue. The left hand is introduced on the right side between placenta and the uterine wall; the placenta is peeled off; the membranes are ruptured; the right foot is seized and a living male child is delivered by podalic version. The placenta comes away easily on pressure from above. The mother made an uneventful recovery and nursed the baby.

CASE II. *Central Placenta Previa.*—Dr. B. H. Portuondo, Belleville, Illinois.

Mrs. M., aged thirty-six years, mother of five children; last menstruation December 20, 1910. June 20, 1911, slight bleeding. August 10, 1911, severe hemorrhage; os admits two fingers and is filled out with placental tissue. Cervical and vaginal pack. After four hours, complete dilatation. A living boy is rapidly delivered by podalic version. The mother made an uneventful recovery. The baby was five weeks premature, according to the menstrual history, but looked much younger. It died on the seventh day.

CASE III. *Central Placenta Previa.*—Dr. A. Newell, St. Louis.

Mrs. R., twenty-five years old, is in her third pregnancy. Last menstruation November 10, 1911; time of expected delivery, August 17, 1912. Slight bleeding in June. On July 5, severe hemorrhage. The internal os barely admits finger and is filled out by placental tissue. Vaginal and cervical pack. July 8, 10 A. M., inner os dilated to a diameter of 3 centimeters. Nothing but placental tissue can be felt. A medium-sized Champetier de Ribes bag is introduced, which detached the placenta to some extent; the bag is placed below the placenta. At 5 P. M. pains are very severe; the bag is removed. There is about 9 centimeters dilatation; placental tissue fills the os completely. The right hand is introduced into the vagina; the placenta is detached from the left uterine wall; the membranes are ruptured; the left foot is seized and the child is delivered by podalic version. It is a girl, weighing 6 pounds. It is slightly asphyxiated, but is easily brought to. The mother made an uneventful recovery.

Statistics on maternal and fetal mortality serve no purpose unless they are correctly interpreted. When all cases of placenta previa which have occurred during a calender year in any certain district—let us say, in the State of Ohio—are conscientiously reported, it will be found that the maternal mortality is very high, perhaps 20 per cent. or more, and that the fetal mortality is still more frightful, but such statistics would include all the cases which have been sacrificed because their obstetrical attendants, both males and females, lacked the special training to deal with this emergency, and which I claim ought to be furnished by the medical schools.

The legitimate maternal mortality in placenta previa does not exceed 4 per cent. (it was 3.69 per cent. in the Dublin Lying-In Hospital, and 3.8 per cent. in the maternities of Berlin).

The fetal mortality must always remain high, because delivery often takes place when the fetus is more or less premature. Version after Braxton-Hicks in the presence of a viable fetus has in the past likewise added to the fetal mortality.

The principal dangers connected with placenta previa are hemorrhage and infection.

The cervical and vaginal pack and the intrauterine balloon treatment, each by itself or in combination, are fully able to control the hemorrhage until there is enough dilatation to deliver by podalic version, forceps, or other means. It is possible to avoid infection by observing the rules of asepsis and antisepsis, and it is possible to teach the general practitioner the use of these obstetrical means and the observance of these rules, and thus to enable him to meet the emergencies arising from placenta previa at times and in places in which nothing but prompt and well-directed action on part of the attending physician can save the life of the patient.

In conclusion, I repeat my contentions:

1. No form of placenta previa, as such, ever offers a justifiable indication for Cesarean section.

2. Version after Braxton-Hicks in the presence of a viable child deliberately sacrifices the life of that child and has no place in modern obstetrics.

3. The cervical and vaginal tampon and the intrauterine use of rubber bags are safe and efficient means for controlling hemorrhage and for securing sufficient dilatation for delivery through the natural passages.

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DISCUSSION.

Dr. E. Gustav Zinke, Cincinnati.—My friend Dr. Schwarz cannot quarrel with me nor can he make me recede from the ground I occupy. It is just as wrong to say that Cesarean section is never indicated in placenta previa as it is to say that the only operation for placenta previa is Cesarean section. Dr. Schwarz has made a very broad statement. We cannot doubt his position, and he shall have no doubt about mine. When I read my paper on placenta previa advocating Cesarean section

eleven years ago in Cleveland, Ohio, I did not meet with a single supporter. I was not the first to recommend Cesarean section for placenta previa. The credit belongs to Lawson Tait. I performed my first Cesarean section for placenta previa about two months ago. My position has been misunderstood. I have been misquoted; sometimes unintentionally, sometimes intentionally. When you have a case of placenta previa centralis in a normal uterus, when the placenta has been formed normally, when the placental tissues do not penetrate the uterine musculature, when the thickness of the uterine wall is uniform throughout, even at the placental site, that case, in the hands of a skillful obstetrician, such as my friend Dr. Schwarz is, may admit of dilatation to its full extent, in many instances, without serious hemorrhages. But the situation is an entirely different one when you have a diseased musculature and an abnormal implantation of the placenta into the structure of the muscularis of the uterus. Then you do not get the separation observed under normal conditions, and the hemorrhage is uncontrollable in spite of the best of management. Again we come in contact with cases where we have a rigid os because of hyperplasia, possibly incipent malignancy, which may or may not be recognized at the time. Hemorrhage does not take place until dilatation begins, and if the obstetrician introduces his hand for the purpose of dilatation, whether he uses the method of Harris or of Edgar, that patient will be brought to the verge of death before the child is delivered. These are the cases for which I have recommended Cesarean section.

It was remarked a moment ago that Cesarean section is not performed often enough, and another speaker stated that it is performed too often. That criticism pertains to every operation. We must depend upon the honesty and acuity of judgment of the practitioner in charge of the case. The personal equation comes in here. There are cases which can only be saved by Cesarean section, all the arguments to the contrary notwithstanding.

Dr. Miles F. Porter, Ft. Wayne.—I would like to ask Dr. Schwartz what his mortality was.

Dr. Schwarz.—Almost every child is born in the condition in which it was when the case reached me. The mortality probably amounted to 40 per cent.

Dr. Porter.—Speaking of the subject of Cesarean section as a means of controlling hemorrhage and saving the woman and child as compared with the packing method, it would be well perhaps for us to go back to some of the things we learned in our school days. If hemorrhage occurs as a result of the separation that takes place from cervical dilatation, you can control it by packing. The control of the hemorrhage is largely dependent upon the pressure that comes from above the bag of waters, and can any man introduce packing there that will overcome a pressure of 110 millimeters? It cannot be done. It will control it sometimes, but there are cases in which it will not, and that is

a physical problem we have to contend with in a good many cases. It seems to me, the point is, how many children did he save by the packing, and how many children might have been saved by Cesarean section. I undertake to say, that a woman in good health, known to be the possessor of a viable child at term, with a placenta previa centralis, can be given a better chance for her own life, and she can have her child given a better chance to live by Cesarean section at the hands of a good man than she can by any skilled obstetric procedure at the hands of the best obstetrician ever yet created. It does not mean that Cesarean section is to be always used, nor on the other hand, does it mean that it is always to be proscribed, but if you have a viable child, with the mother in good condition, the delivery of that child by Cesarean section will give it the best chance to live without added risk to the mother. We were all babies once, and if we do not take care of the babies, we will never have any more mothers.

Dr. John Norval Bell, Detroit.—Dr. Schwarz shook hands with me a short time ago, and said we may not be such good friends after we get through with this discussion. I take exception to one remark made by him, and that is that *no* form of placenta previa is an indication for Cesarean section. My remarks were directed entirely to cases of placenta previa centralis.

I would like to ask Dr. Schwarz in closing the discussion how he would handle a case of placenta previa centralis and expect to get the baby alive.

Dr. Magnus A. Tate, Cincinnati.—I know of no subject that elicits more discussion than the one we have before us today. We have had this subject up in Cincinnati a good many times, and most of us I think take a ground that is opposite from that of my distinguished friend. The last time the subject was up for discussion, I reported three cases of placenta previa centralis which I treated obstetrically and saved all the mothers and two children. I do not believe that any of the advocates of Cesarean operation mean that they would make it when the placenta is situated laterally. Their contention is that it be situated centrally.

My distinguished friend mentions some of the indications whereby he would perform this operation, and among them malignancy, etc. If you have a case of malignancy or fibroid tumor, or anything else of that kind complicating the case, you make the Cesarean section for the malignancy and for fibroid, and not for a case of placenta previa centralis.

Dr. Zinke.—I meant cases of incipient malignancy, the diagnosis of which cannot be made at the time.

Dr. Tate (resuming).—Whenever such a subject is brought up before a body of surgeons, you will find that nine out of ten of them will advocate the performance of this operation, whereas if brought up before a society of skilled and trained obstetricians, they, as a rule will rely upon the treatment as laid down

by Dr. Schwarz, and it seems to me one of the crying needs of this country at the present time is more trained obstetricians and fewer skilled surgeons.

Dr. Channing W. Barrett, Chicago.—In relation to the subject of Cesarean section for placenta previa, it might be well to take into consideration some points in the histology and pathology of the implantation. There was a time perhaps in the embryology or in the history of the Mullerian tract when it was largely the egg-bearing portion by the differentiation of work. By specialization the uterus has become the egg-bearing portion and the tube and cervix, the egg-carrying portion. When pregnancy takes place in a tube, the impregnated ovum is held and becomes implanted, it finds poorly constructed tissue to resist the inroads of the ovum. The trophoblast eats into the structure. When the implantation takes place in the cervix, it also finds the cervix poorly constructed to resist the implantation and the trophoblast eats into the cervix, so that we are dealing with a condition not only of separation but of implanted membranes, and when dilatation takes place, the tissues easily tear. The tissues bleed easily, and so when we are going to deliver a patient the element of hemorrhage is considerable, as we have heard, but the element of time is also important.

Dr. Schwarz takes the ground that no case of placenta previa *per se* should receive Cesarean section, but we get cases in which the element of time is an important factor. We may be able to deliver a case of placenta previa if everything went on easily, if the cervix was going to dilate easily, if there is no resistance, but if we find a cervix that barely dilates and a vaginal tract that dilates poorly, and a bony outlet that is a little close, the time consumed is going to be an important factor in placenta previa. A Cesarean section in these cases, you would say, should be done for the contraction of the pelvis. Not necessarily at all. With a contraction of the pelvis, the patient may very easily go through labor if there is no placenta previa. She may go through a prolonged labor. We should give her plenty of time for the cervix to dilate and the head to move, but if there is placenta previa she cannot go through a long or protracted labor, and so I would rather think that the statement that Cesarean section should be done for no case of placenta previa is rather strong. I do believe, however, that Cesarean section for placenta previa is very much overdone in the hands of general surgically trained men. I believe that if more of these cases fell into the hands of the trained obstetricians, fewer of them would be dealt with by Cesarean section, and more of them will be handled through the natural route. I do believe that there are cases where we would save children by Cesarean section and would lose them through the natural route.

One point I wish to speak of is with reference to packing the vagina and cervix for stopping hemorrhage. That oftentimes prevents hemorrhage from coming to the outer world. A hemorrhage may be going on in the uterus. Not infrequently placenta

previa is one of the causes of premature detachment of the placenta. The placenta may be prematurely detached while the hemorrhage is blocked from coming into the outer world by packing the vagina and cervix.

Dr. Charles L. Bonifield, Cincinnati.—In this discussion it seems to me that the obstetricians, for the most part, speak of Cesarean section as if it were some terrible calamity the patient was being subjected to, or as if by doing this operation we either took the woman to the valley of the shadow of death or rendered her incapable of bearing other children. Dr. Davis and other surgeons, who have done Cesarean section repeatedly, have proven to us conclusively that it is not an operation that brings such dire results in its wake. When Cesarean section was first advocated for placenta previa, I was decidedly opposed to it. I believe, as I have heard the gentlemen say to-day, that we should have more trained obstetricians, and we need them, for there is no branch of medicine more neglected in the medical schools. On the other hand, there are certain cases where I believe a skilled surgeon is better than a skilled obstetrician.

During the last year a woman came into the Good Samaritan Hospital who had been seen by a number of good practitioners, and one capable obstetrician. It was a case of placenta previa. She had been tamponed and tamponed for the control of hemorrhage. She was all bled out with placenta previa centralis, so that she could not very well stand the loss of any more blood, nor could she stand any operation that would consume any considerable time, and so instead of calling in one of my distinguished capable obstetric friends, I did a Cesarean section on her, and saved the lives of both mother and child. Could they have done better? She has her ovaries and uterus, so that she can become pregnant again.

Dr. E. Gustav Zinke, Cincinnati.—I would like to add a few words as to the difference between the obstetrician and the surgeon. There are obstetricians who are not surgeons. I am perfectly willing that they shall continue to exist if in case of need they will send for an obstetrician who is a surgeon; but I do not believe that any man has a right to be a teacher of obstetrics and not be capable of doing every part of obstetric surgery.

Dr. Schwarz (closing).—I thank the gentlemen for the liberal discussion, and I am in full accord with Dr. Zinke in his statement that in spite of all argument we will fail to reach an agreement.

The same question was discussed before the American Gynecological Society three years ago, and I am willing to endorse some of the opinions expressed on that occasion. For instance, Dr. Jewett of Brooklyn, said: "Grave hemorrhage in placenta previa is due more to failure in the timely and well-directed use of the obstetric measures than to any lack of them." And Dr. Newell of Boston, expresses himself thus: "The advocates of Cesarean section have not recognized that their personal limitations furnish the great indication for abdominal delivery and not the exigencies of the case."

RAPID DILATATION AND ACCOUCHEMENT FORCE.

BY

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(With Two Illustrations.)

PRESENTATION of this subject is prompted by two motives. First, to emphasize the importance of delivery per viam naturales whenever it is possible; and second, to suggest methods of its accomplishment when such delivery is indicated.

Of the obstetric emergencies demanding prompt delivery, eclampsia is most important and also of most frequent occurrence. Waiving vague theories and confronting a crisis, the eclamptic woman is a surcharged battery; her centers responding to the stimulus of either excessive or faulty metabolism. Such recognition and such acceptance of the eclamptic explosion is only in keeping with present-day advancement. The content of the uterus has become a foreign body and an irritant, perverting metabolic equilibrium and creating pressure, thus passing to the category of conditions demanding prompt surgical relief.

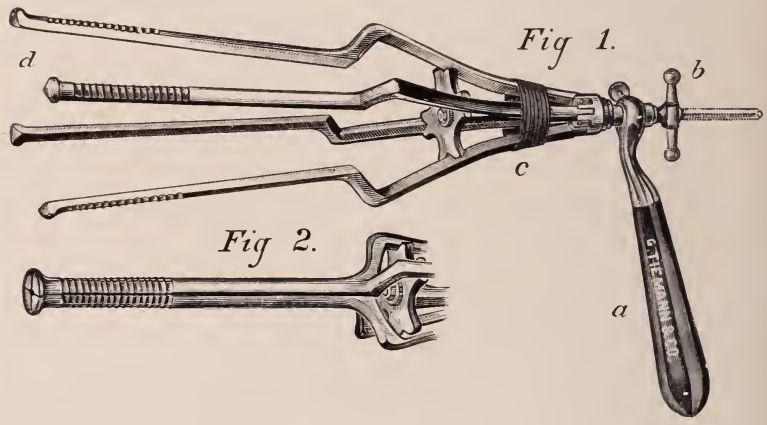
In such conditions we may have, a *focus* of pain, a *focus* of infection, and a *focus* of possible disaster, from either pressure or rupture; and a pregnancy of this type, if at all advanced, well-nigh completes the trinity of vital dangers that should always appeal to the surgical conscience.

Confronting such a crisis, we believe that elimination, with all that the term conveys, with prompt removal of the causative focus, is the leading indication; and we also believe that the avenues of outlet established by nature are most readily and practically available in the majority of such emergencies.

The Cesarean section skilfully done—as it is by the master hand of a Fellow of this Association—is ideal under proper conditions, when the skill and the accessories are available. But it is "out in the field" where emergencies arise in which prompt action is essential and such conditions cannot be obtained.

The methods of dilatation that have served me best are two —*manual* and *instrumental*. Manual dilatation, in which the fingers are used as dilators, I really deem of most importance,

because it is always available and with a clean hand is comparatively safe. The index-finger (its tip being most conical), is "wormed" into the os by a spiral motion, and with it gentle traction is made toward the symphysis, sufficient force being used to gradually make room for the introduction of the middle finger. Now, the index-finger is held taut, its fixed point inclining to the anterior portion of the cervix, while the middle finger, introduced to the full distance of its first joint, is repeatedly flexed with force, thus making room for the ring finger, with which force is applied to the encircling os in like manner as with



the middle one. Through this maneuver room is made for the little finger and also, often simultaneously, for the thumb. Upon the introduction of the latter, the leverage becomes most powerful and the dilatation is soon accomplished.

An excellent method of practising this maneuver is by making a closed circle with the thumb and index-finger of the left hand and then dilating it with the fingers of the right.

The result of this method of dilatation, especially under chloroform, is very prompt, and the dilatation is effected without the introduction of foreign bodies into the uterine cavity. It may be practised at any time with the two hands, used at almost any stage of gestation, after the very early months, and, when the fingers are properly educated and the muscles trained to their work, dilatation can be accomplished in a very few minutes.

The second method—instrumental dilatation—is one devised in 1892, before my fingers had been trained to do their work and was the outcome of a critical emergency demanding such assistance.

The mechanism of the instrument is simple, but accurate, the dilatation gentle but sure and sufficient to allow the introduction and application of either long or short forceps.

Fig. 1 shows the dilator open; *a* is the handle of hard rubber (the 1912 model has a metal handle, the better for sterilization), rotating on a shaft and tightened with a setscrew; *b* is the dilating screw, graduated with letterings and lines to indicate the exact distance the points of the dilating blades are separated; *c* is a heavy rubber band for securing the approximation of the blades for withdrawal, when the dilation is completed; *d* represents the four dilating blades, 6 inches long, corrugated to prevent slipping of the encircling os, each having a delicate, flange-like projection at its distal point to hold it securely within the os. The blades are highly polished, no sharp edges to pinch or otherwise injure the mucous membrane of the parts, and when closed for introduction (see Fig. 2), the distal points represent a circle the size of a silver dime, with a slight concavity presenting to the child's head, for safety in case of contact during a pain.

Thus we have in the four blades *four points of peripheral irritation in the circumference of the os*, with a *dilatation of from* 3 *to* 3 1/2 *inches*, after having deducted the probable yielding due to the spring in the blades which it is impossible to prevent.

The position of the patient for introducing the dilator must depend upon several conditions, chief of which are the stage of gestation and the position of the os. If, in a multipara, gestation is near term, the vagina large and the os easily reached by the examining finger, no especial deviation from the ordinary dorsal position will be necessary. If, however, we have either a primipara or a multipara with gestation partially advanced, the parts firm and unyielding, and the os buried in the hollow of the sacrum, it will then be necessary to elevate the hips, relax the system with chloroform, and pull down the perineum either with the hand or the duckbilled speculum in order to secure the introduction of the dilating blades.

After introducing the dilator into the os the handle is firmly grasped in the left hand of the operator, adjusted by the setscrew in the best position for convenience relative to the thighs and nates, and the right hand is left entirely free to control the process of dilatation, the rapidity of which must be governed by the condition of the parts.

My first use of the dilator was in June, 1892, when I was called about daybreak to a patient who had been in convulsions

since midnight. I found a large plethoric woman, wanting some days of full term, with the os only sufficiently open to admit one finger. Convulsions were recurring about every fifteen minutes. This was several miles in the country. With the husband to give the chloroform, I elevated the hips by placing a pillow beneath them and proceeded to make forcible dilatation with my rapid obstetric dilator. Within an hour I was able to apply Barnes' forceps above the superior strait, and in an hour and a quarter I had delivered the mother of a healthy living child in good condition.

The mother had several convulsions while the dilatation was in process, during which, of course, I withdrew the blades, and one after the child was delivered. There was a slight tear of the cervix and the mother had some fever afterward, but eventually made a good recovery. This dilatation could have been done in one-half the time, had the emergency demanded it, but believing the vital powers of the woman sufficient to justify my disposition to conservatism, I operated with much deliberation, giving the encircling fibers of the os ample time to yield to the stimulus of the dilating blades.

That the knowledge of my device was not limited to this country, is shown by the following copy of a postal card from the editor of the *North Carolina Medical Journal:*

WILMINGTON, N. C.,
December 17, 1892.

My dear doctor:

I thought you would appreciate knowing that we have just received an application for our Journal containing your uterine dilator, from Berne, Switzerland.

Yours very truly,
No. Ca. Med. Journal,
R. D. JEWETT.

Thus it would seem that Bossi and I, almost simultaneously and absolutely independent of each other, devised and employed, instruments which were practically identical in construction.

Bossi's dilator was devised in 1889, and first described in 1891. (*Gazetta degli pedali* Milano, no. 29, 1891). It was described more fully the following year (Della provocazione artificiale del parto e sulparto forzato col mezzo della dilatazione meccanica del collo uterino. *Ann. di ost. e ginecol.*, Dec., 1892), but did not

become generally known outside of Italy until 1901, when Leopold introduced it into Germany.

Accordingly, while I cannot claim to be the only original inventor of the instrument, it would nevertheless follow that to me belongs the credit of being the first to invent and make use of such a device in America, as I had employed it successfully nearly ten years before Bossi's invention was heard of in this country.

Finally, in the matter of rapid dilatation, let me emphasize the fact that the metallic dilator is a powerful instrument, and, while it should have a place in obstetrics, it should only be used in extreme emergencies, where prompt delivery, through the natural outlet is essential to saving life and the dilatation cannot be accomplished by manual methods.

Accouchement force, it seems to me, should have a broader sense than the one of its definitive acceptance; applying not only to cases of induced labor, but to all cases in which either forceps, or force, are used in effecting delivery. Let us, therefore, at this time consider it in such relation.

As a matter of fact, I believe that forceps are applied more often than they should be. In taking this position, we must accept and consider the dangers accompanying their use. These dangers are two, *infection* and *trauma*.

In gynecologic surgery, a very large proportion of the patients present either an extended infection which has not cleared up or a trauma to the outlet, needing repair. Most of these conditions date from a "confinement," and a very large proportion of them have had a "forceps delivery."

In looking over some brief, practical notes on 800 cases of labor in private practice, I find that forceps were applied fifty times. Of these cases, 252 were primipara, and 548 multipara. Although the proportionate number is small, it seems that only ten of these were cases of convulsions, the remainder being a demand for help either on account of a rachitic pelvis, uterine inertia, breech presentation, placenta previa, or such inequality between the child's head and the maternal outlet, as either to prevent engagement at the pelvic brim or endanger the maternal soft parts by prolonged pressure.

To emphasize and illustrate my plea for conversatism in the use of forceps, I recall among my cases two in which forceps were applied, resulting in a complete tear with much contusion of tissue and destruction of the sphincter and two in which the

head alone wrought similar results in the posterior wall, although not quite so extensive. The four were subjected to immediate repair. In the latter two, where forceps were not used, the repair was successful, giving bowel control. The forceps cases, one of the tabulated list in private practice and one in hospital service, were failures at the primary operation. The most extensive of these, the one in private practice, had a subsequent operation after several months, in which the classic Emmet procedure gave an excellent result, restoring tone and function and even standing the test of a subsequent confinement. The second one, in the hospital service, would not remain for a subsequent operation and I fear is still a victim of the accident. These were both primipara and both were having convulsions.

In brief résumé, and again in emphasis: all cases of puerperal convulsions, if at all near full term, with even initial labor pains, *should be delivered.* With strict asepsis, forcible, rapid dilatation, preferably manual, the application of forceps, and delivery by the natural outlet, is most safe, most readily available, and will give the best results in a very large majority of cases. The delivery should be effected under ether and with care and deliberation. In the two cases cited, of sphincter tears, I firmly believe that greater deliberation in delivery would have lessened the extent of the injury.

In other conditions mentioned, viz., inertia, breech presentation, placenta previa, excessive size of the fetus with delayed engagement, delayed expulsion from the vagina endangering the maternal soft parts from pressure, rachitic pelvis, etc., forceps delivery is indicated, and under carefully aseptic conditions should be promptly effected. Extreme care, however, should be used in determining exact conditions relative to both mother and fetus, and the amount and direction of the traction force, together with the speed of delivery, should be governed entirely by these conditions.

As "timesavers," forceps in any case and under any conditions at all, introduce two elements of danger—*infection* and *trauma*—making their use *unwarranted;* the question not being, "will the patient bear a forceps delivery," but, "is the maternal outlet yielding," and "will delivery be safely effected if we will wait awhile?"

In many cases, when we have become very weary of our watch, and the temptation is very great, a walk in the moonlight or the early morning shadows, will help us very much. When we

return we are refreshed, the patient has had a "nap" and as the morning sun, with the rising tide of life, shoots its rays across the eastern horizon, the pains return with renewed vigor, and safe delivery is soon accomplished.

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DISCUSSION ON THE PAPER OF DR. LOTT.

Dr. Rufus B. Hall, Cincinnati.—I rise to discuss that part of the paper which pertains to rapid delivery by instrumentation. I think that is right and justifiable, but when it comes to the dilatation of the cervix with a metallic instrument, such as the one illustrated here, I do not doubt but what the cervix can be dilated with this instrument or more probably torn. I think it requires delicacy of manipulation and great care to control the dilatation. I should think it would be an easy matter to tear a cervix with an instrument like this, and where the real object of the doctor is to deliver the woman quickly when she is in convulsions, it occurs to me that she could be delivered more safely and with less risk by a vaginal Cesarean section. I do not believe I could deliver a woman with this instrument by dilating the cervix without serious injury to her cervix. I would rather repair what injury I might do afterward by making a vaginal Cesarean section and give her as good a chance as I could by a clean operation. I would condemn the use of this instrument. I cannot imagine when I would use it for the purpose for which it is intended.

Dr. Asa B. Davis, New York.—Accouchement forcé has been tried, and it was the method of delivery before Cesarean section had reached the position which it now holds. Our experience with that method of delivery has been that while the cervix is dilated, more often it is lacerated. We do not resort to dilatation in these cases, to any great extent, as the laceration or traumatism is very severe. There is no doubt about that in our minds. We start the laceration before the child is delivered. In delivering the child in our experience the laceration has extended beyond the point at which we begin to deliver the child, and often it has extended so that large vessels are torn through. In some instances we used to rely upon packing the uterus and packing the lacerations. We can pack these women so that hemorrhage will be checked for possibly an hour. By that time

the packing has become wet at the site of the bleeding, and the packing is usually taken out. The hemorrhage goes through the packing that is already in. The packing is taken out and some more is put in. In a number of cases, the patients have died from hemorrhage and shock. In the cases reported very often we find that the cervix, the pelvic floor and sphincter are lacerated. With our present knowledge we can go in from above and make a clean-cut wound. We know the dimensions of it. We can close it quickly in a clean surgical way, and the cervix is left as it was before we began.

As to the necessity of the practitioners who are isolated and are distant from help, I will say that the means of communication with small hospitals has developed to such an extent that help can be had in the majority of cases, and I believe very thoroughly in cases where we have to deliver rapidly that Cesarean section is the preferable operation, and that abdominal Cesarean section has a decided advantage over the vaginal operation. Through the vagina we can get the child out quickly, but it is another matter, as I have experienced, to close wound and get good coaptation. In subsequent deliveries if we resort to vaginal Cesarean section, those old scars are very much more apt to tear.

Dr. Julius H. Jacobson, Toledo, Ohio.—The subject of accouchement forcé is one of the most important that can be brought before this association. I rise to speak a word in favor of vaginal Cesarean section. The more experience we have with this operation the better do we understand the indications for its employment. My experience with vaginal Cesarean section is limited to six cases, in which I have learned something regarding indications for the operation. I have learned that the operation is very easy when performed before or about the twenty-eighth or thirtieth week, and that it is difficult when peformed at full term. The objections raised by Dr. Davis are well taken, against the operation at full term. Vaginal Cesarean section, when performed for eclampsia at or before the twenty-eighth or thirtieth week, is an operation that can be done with great facility and I believe should always be performed in preference to the abdominal Cesarean operation. It is in the limitations of vaginal Cesarean section that we will get the best results with it. I believe that the term of vaginal Cesarean section should be changed to that of vaginal hysterotomy, which in my opinion better expresses the real scope of the operation.

Dr. Samuel W. Bandler, New York.—There are a great many cases where labor is already going on; the cervix is somewhat dilated, but it is not dilating as rapidly as you wish it, yet there is no reason why you should not deliver the woman through the vagina. There is no reason why, in these cases, where you have no strict indications before you, you should find it necessary to do abdominal Cesarean section. In those cases where the cervix dilates only a little, and yet we are in a hurry, I have never had any difficulty, even where the cervix

was only slightly dilated at first, in easily introducing two fingers, and then bringing about complete dilatation in a short time. Where the cervix is not dilatable, there is a great field for vaginal Cesarean section. After we have begun the method of dilatation by the fingers, and find it does not work well, or find it is not practicable, vaginal Cesarean section is an admirable method. A procedure that aids very much in carrying out vaginal Cesarean section is one I have tried in three cases, using it first in a case of placenta previa lateralis. Where we wish to go ahead quickly and dilate, and at the same time stop bleeding, I have followed the method of Dührssen, introducing a Champetier de Ribes bag, and with that in place, we can make a transverse and longitudinal vaginal incision, separate the bladder, and do the anterior and posterior hysterotomy operation beautifully. I have never seen a tear from the associated delivery, either by the hand or forceps, nor any gaping of the wound that I could not sew up quickly. I can see every point where I apply sutures.

Dr. Lott (closing).—I am sorry the discussion was not more extensive, but what has been said only emphasizes the importance of the subject. I quite agree with the gentlemen who say that the metallic dilator is a very powerful instrument, and a very dangerous instrument in the hands of those who are not skilled in its use. If it is used at all, it must be used very carefully and very skillfully. Please let me emphasize this point and let it be distinctly understood, that artificial dilatation, when it is essential, may be accomplished with far greater safety by the manual method.

PUERPERAL THROMBOPHLEBITIS.

BY

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THE clinical picture of puerperal pyemia varies with the site and extent of the structures involved, with the virulence and numbers of the infecting microorganisms and finally with the tissue resistance of the host. We are all familiar with the condition popularly called "milk leg" or "white leg," which is a mild form of vein infection. A striking contrast is presented in acute puerperal pyemia where chill follows upon chill, the temperature curve presenting great fluctuations which mark the flooding of the circulation with microorganisms or their toxins, the pulse becoming rapid and feeble and the development of great prostration. All this is the clinical expression of an infection starting, as a rule, at the placental site and traveling rapidly by way of the veins of the uterine wall, thence to the broad ligaments, ovarian plexus, internal iliacs, common iliacs, downward to the femoral veins and upward to the vena cava. Into the general circulation of the blood microorganisms and infected emboli are carried to the lungs and elsewhere and death almost certainly closes the scene.

These are the two extremes of puerperal thrombophlebitis and between them are the subacute and chronic cases which are marked by delay in their onset and an insidious course. Days and even weeks may pass with no more than the local manifestations of a mild uterine infection as suggested by altered lochia, pelvic tenderness and slight rise of temperature. Even these symptoms may disappear for a time before the onset of signs of a grave infection become manifest.

Thrombosis of the veins at the placental site and in the wall of the uterus is a physiological process. This occurs to a varying degree within normal limits. Where the uterus fails to contract well, following the completion of labor, thrombosis is much increased.

The exposed venous sinuses at the placental site afford to the infecting microorganisms a convenient means of entrance into the circulation of the blood. However, contrary to early conceived notions, the presence of these microorganisms in the blood

does not necessarily lead to a fatal issue. So far as our knowledge extends the issue is determined by the number and virulence of the invading germs on the one hand and the tissue resistance of the host on the other. It follows that the number of germs found circulating in the blood does not speak *per se* for the virulence of the infection.

The frequency of puerperal thrombophlebitis is estimated at approximately 30 to 55 per cent. of all fatal cases of puerperal sepsis. Trendelenburg found twenty-two instances in forty-three autopsies, Lenhartz thirty-two in sixty fatal cases, and Kneise twenty-seven in eighty-nine autopsies.

The veins primarily involved are the uterine and ovarian or spermatic. The uterine veins convey the blood from the upper portion of the vagina, cervix and the greater part of the body of the uterus, while the ovarian or spermatic veins convey the blood from the fundus of the uterus, tubes and ovaries. The uterine veins converge to form the hypogastric veins which join with the external iliac veins to form the common iliac vein, which in turn unite into the inferior vena cava.

The frequency with which the respective veins are thrombosed is variously stated. For example, Lenhartz found a unilateral involvement in 80 per cent. of his thirty-nine cases. In four of his cases the thrombus extended into the vena cava. von Recklinghausen states that in most of the fatal cases the thrombosis involved the ovarian veins. In all of the twenty-five cases observed by Seegert the ovarian veins were thrombosed. In nineteen of the twenty-five cases the lesion was unilateral.

These thrombi may suppurate and give rise to metastatic abscesses of the viscera. The lungs are the most frequent seat of the infected emboli arising from the pelvic veins. Less frequent lesions are ulcerative endocarditis, renal infection, gastro-intestinal infection, as well as infections of the brain and meninges, joints, retina, peritoneum, skin and subcutaneous tissues. The distinctive lesion in the uterus is found in the thrombosed sinuses which lead to the veins in the broad ligament. It is not an easy task to detect the organisms in the general circulation of the blood, inasmuch as they may be wholly absent, are seldom in large numbers and as a rule invade the blood stream at intervals.

The clinical course of puerperal thrombophlebitis is seldom acute. While the evidences of a local pelvic infection are usually

found early in the course of the disease it is the rule that characteristic symptoms do not develop prior to the second week of the puerperium. It may be that in the first week of the puerperium the clinical course does not vary from the normal but, on the other hand, alarming symptoms of a general infection may follow closely upon labor. The symptoms are ushered in by a rigor followed by a rapid elevation of temperature to 104°–106° F. and a corresponding increase in pulse rate. The temperature falls to normal or near normal but the pulse will usually continue at a relatively rapid rate.

Rigors are presumed to signal the entrance of microorganisms or their toxins into the circulation. They are usually repeated at irregular intervals and may continue over a period of many weeks. Cases have been known to recover after from sixty to seventy chills. It is regarded as a hopeful sign when the rigors become less pronounced and recur at longer intervals. Having ceased to recur recovery is usually speedy. As the disease progresses the pulse becomes weaker, more rapid and compressible. Nutrition fails rapidly, the face increases in palor and icterus may develop. Diarrhea with offensive stools is often observed but vomiting is unusual. The mind may remain clear to the end but delirium may develop and deepen into a maniacal condition. Mahler says that great rapidity of the pulse speaks for a widespread thrombosis of the pelvic veins.

On examination of the pelvic organs there is usually found some evidence of infection. The uterus may be perfectly involuted but is more often soft, enlarged and somewhat tender to pressure. To one side of the uterus it is often possible to palpate the thrombosed veins which form an irregular elongated mass running from the uterus to the side of the pelvis. These findings are commonly unilateral. The presence of tenderness along the course of the femoral vein and edema of the groin and thigh are not constant findings but when present are of the highest significance.

For years the aural surgeons were ligating the jugular vein to check the advance of infected thrombi when W. A. Freund, in 1897, ligated the spermatic veins of two cases of puerperal thrombophlebitis but without success. Five years later Trendelenburg operated five cases with one recovery. His low percentage of recoveries can be accounted for by the fact that four of them were operated in the acute stage; the one operated twenty-six days after delivery, recovered.

Bumm, in 1905, published his results in five cases of chronic pyemia. Of this number three recovered. This report gave an impetus to the procedure. Since then Fromme, Cuff, Latzke, Whitridge Williams, Lenhartz, Opitz, Osterlow, Vineberg, Miller, Huggins, and others have reported cases.

Whitridge Williams operated twenty-eight cases which he regarded as suitable. Of this number six died, a mortality of 21.4 per cent. There were twelve cases in which the thrombosis was limited to one or both spermatics and only one of this number died. Huggins operated four cases with one death.

Osterlow reported seven cases with four deaths which he as-ascribes to too late operating. Latzke reported thirty-seven cases operated for thrombophlebitis, of which number fourteen recovered. Michels operated three cases with two recoveries. One of the fatal cases was operated in the presence of a general septicemia. Michels collected sixty-four operated cases in the literature of which number twenty-nine recovered.

Jeff Miller finds eighty-one cases now on record. Many of the cases resulting in death should not have been operated because the disease had progressed beyond the point of ligature. In several the infected thrombi were found in the inferior vena cava. Again there were those operated in which the lymphatic invasion was well advanced, leaving nothing to be gained by ligating the veins. It is noted that in many operated cases which ended fatally the surgeon failed to ligate all of the thrombosed veins and as a rule the infection continued to spread.

Vineberg, of New York, operated a case of criminal abortion two days after the uterus was cureted. He opened the abdomen and found both spermatic veins thrombosed. These were ligated as well as the left median iliac vein. Following the ligation of these veins a panhysterectomy was done. Streptococci were found in the blood. The case recovered. Later he lost a similar case. A third case developed a thrombophlebitis five days after a normal delivery and apparently normal course. The first rigor occurred on the thirty-first day of the puerperium. On the twenty-seventh day he ligated the right spermatic vein close to the vena cava. The operation was done too late and was followed by death. A fourth case followed a spontaneous labor. Evidences of thrombophlebitis developed and operation was performed on the fifteenth day. There were multiple abscesses of the uterus and septic thrombosis of the right sper-

matic vein. The vein was ligated and excised and the uterus and its appendages removed. Recovery followed.

We are admonished not to operate in the acute stage of the infection. The earliest successful case was that of Vineberg which was operated on the fifteenth day of the infection. In the acute stage of the infection there is great danger of spreading the same and at such times the low resistance of the patient would render such an operation extremely hazardous. In the acute stage the mortality of nonoperated cases is not less than 75 per cent., as compared with a mortality of 38 to 40 per cent. in the chronic stage. It may be fairly stated that the mortality of chronic pyemia has been lowered full 10 per cent. by the timely ligation of infected veins. We are admonished by Trendelenburg and Bucura to operate after the fourth chill. It is questionable if this is a safe rule of practice, inasmuch as many cases are known to recover without operation after a dozen or more chills.

The operation is clearly contraindicated where metastatic abscesses are recognized, where pus has accumulated in the pelvis and where there are distinct evidences of lymphatic invasion.

Pneumonia and endocarditis are placed as contraindications to the operation, while pleurisy and lung infarcts do not necessarily contraindicate operative interference. Where there is marked edema of the leg it is assumed that the common iliac vein is thrombosed—such cases are not looked upon as favorable for operation. Recovery is possible in the presence of a bacteriemia and death may ensue in the absence of microorganisms in the blood. It is the rule that the blood seldom contains a large number of germs and that these are not constant in their presence. Hence it follows that blood findings are of little value in determining the prognosis or the question of operative interference.

The thrombosed veins have been approached by three routes, the vaginal, the extraperitoneal and the intraperitoneal. The first and second procedure have not been generally adopted for the reason that the veins in either side of the pelvis and higher up in the abdomen cannot be under direct inspection. The technic of the intraperitoneal route is briefly as follows:

The abdomen is opened in the median line. The uterus and its appendages are inspected. Next the broad ligaments are inspected and palpated with special reference to the course of the uterine and ovarian veins. If the broad ligaments are found to be thickened along the course of these veins the existence of

thrombosis is assumed. The veins are then palpated along their course to a point above the thrombus; here the peritoneum is incised and a ligature is passed about the veins by means of an aneurism needle. Ligature of the ovarian veins may be made as high as the vena cava on the right side and to the point of union with the renal veins on the left side. Where the internal iliac vein is involved it should be ligated near to its juncture with the external iliac vein. If a median iliac vein exists this should be ligated at its juncture with the external iliac trunk. Lea recommends the ligature of both sides in every case because of the free anastomosis. The more acute the infection the more extensive the ligations. Care must be taken to prevent ligature of the ureters and lumbosacral cord.

After such extensive ligations of the veins the pelvic organs and vulva become edematous but this is soon remedied by the establishment of collateral circulation. Where the thrombus has developed into an abscess we are advised to dissect out the vein with a thermocautery.

I have had seven recent experiences with this condition. My first patient was in the Clarkson Hospital for a period of two weeks before her death. There were unmistakable evidences of metastatic involvement of the right lung when she entered the hospital, three weeks after a miscarriage at the seventh month of gestation.

She had fully a dozen chills before she entered the hospital and an equal number during her period of two weeks in the hospital. Her temperature ranged from subnormal to 106° F., the pulse from 120 to 180 and the respirations from thirty to fifty. Icterus developed a few days before death and there were occasional periods of delirium. There was no abdominal distention or tenderness. The uterus was well contracted, not tender and was freely movable. To the right of the uterus could be felt a doughy elongated mass in the broad ligament.

The postmortem findings were most instructive. The uterus presented a normal appearance for the fifth week of the puerperium with the exception of a plastic exudate covering its external surface. To the left of the uterus there were no thrombosed veins, but on the right side both the uterine and spermatic veins were thrombosed. The thrombosis in the uterine veins did not extend above the broad ligaments while the spermatic formed a rope of veins about one inch in diameter and extending to its union with the vena cava. The lower portion of the vein contained a firm blood clot while the upper portion was filled

with pus which had freely discharged into the vena cava. On the wall of the vena cava at the entrance of the right spermatic vein was a mural thrombus but there was no closure of the lumen of the vena cava.

There were multiple abscesses in the right lung with about two quarts of pus in the right pleural cavity. One or more of the abscesses had ruptured into the pleural cavity. The peritoneum and uterine appendages were not involved nor was there an evident lymphatic invasion.

It is evident that there *was* a time in the course of this infection when a ligature placed above the advancing thrombus in the right spermatic and around the right internal iliac vein would have effectually blocked the advance of the infection but in reviewing the history of the case, in the light of the postmortem findings, I am unable to say when that time was and I seriously question if any one would have been justified in interfering surgically at any time in the course of the disease because of the rapidity with which the disease developed. In other words the opportunity was there but who could have recognized it?

Shortly after this experience I fell heir to another case of puerperal pyemia which ran a more chronic course and in which there was no evidence of metastasis. I believed this case was loosing ground and in the absence of any demonstrable contraindication I made an exploratory incision in the hope of finding conditions favorable for the ligating of thrombosed veins. This was three weeks after the initial chill and she had had ten to twelve chills. Findings were negative everywhere. There were no thrombosed veins that I could recognize and the abdomen was closed after placing a ligature about the spermatic veins of both sides. This procedure did not depress the patient but certainly did her no good for she subsequently had numerous chills and metastatic abscesses developed in the right lung with pus in the pleural cavity which was drained. This case ultimately recovered.

My third experience was in a case in which there had been a miscarriage at the third month of gestation three weeks before I saw her. I drained a pelvic abscess to the left of the uterus. Two weeks later the left lung was invaded by infected emboli, and in another week the right lung was invaded. She died ten weeks after the miscarriage. A postmortem examination made by Dr. Dunn of Omaha demonstrated that the infection, which was due to a short chain streptococcus, was conveyed from the uterus by three separate avenues.

First the infection spread by continuity of tissue from the uterus through the tubes to the pelvic peritoneum, developing an abscess behind the uterus and a general plastic exudate over all the pelvic organs. The general peritoneal cavity was not invaded.

Second the infection spread by way of the lymph channels of the uterus and broad ligaments and resulted in an enlargement of the lymph nodes throughout the abdomen.

Third, the infection spread through the veins on the right side, involving both the hypogastrics and spermatics, the internal, external and common iliac veins. Most of these veins were distended with pus. On the left side the hypogastrics and internal iliac were thrombosed.

This condition was clearly a contraindication to the Trendelenburg operation because of the general lymphatic invasion if for no other reason.

My fourth experience was in an apparently typical case which had persisted three months and which promptly reacted and recovered after the administration of mixed vaccines.

Cases five, six and seven were observed subsequent to the reading of this paper. They were almost indentical in their clinical manifestations and postmortem findings. In all three the infection followed full-term deliveries, there was no instrumental interference in any of the cases but the attending physicians had made one or more digital examinations in the course of labor. No metastasis developed and in two of the cases the right spermatic veins alone were involved while in the third the left spermatic, left uterine, internal iliac, common iliac and external iliac veins were thrombosed and the left femoral vein was distended with pus to the level of the knee. All three died.

In none of these cases was operation attempted and in the light of the postmortem findings I am persuaded that it would not have been wise to have interfered surgically.

I am not prepared to take a definite position for or against the procedure of Trendelenburg, but will submit the following propositions for your consideration.

1. The operation of Trendelenburg is correct in theory but is as yet in the experimenta stage.

2. It is contrary to my practice and to modern teaching to open the abdomen in the course of puerperal infection unless for drainage in general peritonitis and we therefore view the suggestion of Trendelenburg with misgivings.

3. We are as yet unable to demonstrate clinically the extent

to which the infection has traveled, hence it follows that an exploratory incision must be the final resort in determining the extent of the infection, and even this means may fail to give the desired information.

4. The pelvic veins including the iliacs may not be thrombosed and yet the infection may attack the veins higher in the abdomen, beyond control and even beyond inspection through an exploratory incision. Furthermore bacterial emboli may develop in the lungs and elsewhere without the formation of thrombosed veins.

5. The thrombosed veins may be secured and the infection later travel by other avenues and lead to a fatal issue.

6. It is not always possible to demonstrate the presence of infected emboli which, when found, are viewed as contraindications to operative interference.

7. We believe the Trendelenburg operation will find a limited field of usefulness in obstetric surgery, but that the procedure is worthy of an extended trial.

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SEPTIC PELVIC THROMBOPHLEBITIS.

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THE frequency of septic pelvic thrombophlebitis and its high mortalitiy makes this subject of sufficient interest to bring it up for discussion before our society. To intelligently discuss this subject, it is necessary for us to understand the meaning, formation, etiology and progress of a thrombus. Thrombus is frequently used synonymously with clot. To understand what is meant by thrombus it is best to differentiate it from a clot, for even men like Virchow not many years ago, considered thrombus formation and blood coagulation to be identical processes(54).

Thrombus and Clot Differentiated.—A thrombus is not a clot. A clot forms in a stagnant circulation, while thrombus can form only in the current blood(54). While in clot formation the fibrin ferment is a chief factor, in thrombus formation it does not play any primary rôle at all (Aschoff and Lubarsch (54)). A clot formation is based on the entangling by fibrin of red and white blood cells while a thrombus formation is based primarily on agglutination of blood platelets,[1] the fibrin and blood cells becoming deposited in the thrombus secondarily. A clot is primarily independent of the vessel wall while a thrombus is always adherent to the wall of the vessel.

Formation of Thrombus.—Observing types of thrombi in their early stages we find them to consist almost entirely of coalesced platelets, the leucocytes, fibrin and erythrocytes (that we usually find in thrombi at the margins or between the platelet masses) appear later. It is upon the degree of the prevalence of these secondary blood elements in the thrombi that their classification into hyaline, white and red depends.

The hyaline thrombus is very small. It is found chiefly in

[1] According to Wright the most typical platelets are derived from the megacaryocytes of the bone-marrow. Arnold claims that they originate from the red blood cells.

The platelets are about 1/3 micron in size, very fragile, round or oval, have no hemoglobin, no nucleus, and no chromatin. They have a tendency to agglutinate outside the body and under the microscope they are seen in clumps between strands of fibrin. They number between 200,000 to 860,000 per cubic centimeter and are frequently mistaken for the plasmodium malariæ, especially when they chance to lie on red cells.(1)

capillaries and very small vessels. It may be composed of a mass of ordinary blood platelets, showing only here and there a leucocyte, or of platelets resembling colorless erythrocytes, or again it may consist of a number of layers, shading off one into another, beginning with a hyaline colorless layer, gradually passing into a layer of blood platelets, then changing into a layer of blood cells poor in hemoglobin.

The white thrombus is much larger in size. It is the most common and therefore the most important one. It is found in the large vessels and is composed of masses of blood platelets, separated by a close network of fibrin which may or may not hold leucocytes and erythrocytes.

The red thrombus is found in aneurysms and large veins. It begins as a platelet thrombus but the fibrin appearing later enmeshes erythrocytes in such large numbers that it give the thrombus a red appearance.

The so-called acute red thrombus occurs only in a completely arrested blood current as in a ligated vessel. The column of stagnant blood above the ligature forms a clot and only at the point of ligation of the vessel on account of injury to its wall can a collection of platelets be made out(1).

ETIOLOGY OF THROMBUS FORMATION.

Let us consider now what factors bring about the agglutination of the platelets into masses and make them adhere to the vessel wall, in other words let us consider the causative factors of thrombus formation.

Slowed Circulation.—One of the most important factors in thrombus formation is slowed circulation. While the platelets under normal conditions circulate with the corpuscles in the axial current, they appear in the outer zone when the circulation is sufficiently slowed, thus coming in contact with the vascular intima. Moderate retardation, however, may not be sufficient; it may favor accumulation of only the white corpuscles in the outer zone of the vessel, while to bring the platelets into the outer zone considerable slackening of the stream is necessary. But it must not be a complete blocking[1], for a blood current

[1] Baumgarden(54) tied a vessel off in two places and found the blood between the ligatures fluid after a week.

Schwalbe claimed to have found a blood platelet thrombus in a doubly ligated vessel but Derevenko found that the reason for Schwalbe's thrombus was the puncture in the vessel wall, which allowed some of the blood to flow out. The blood platelets accumulated at the point of puncture during the slow outflow of the blood(11).

is necessary to bring sufficient number of platelets to any given point for thrombus formation. In a completely blocked circulation this cannot occur. Of course the larger the platelet count, the greater is the number of platelets brought in contact with the vessel wall. This view is held by Eberth, Schimmelbusch, von Recklinghausen, Aschoff, Lubarsch, Ferge, Zurhelle and others. Since for thrombus formation the platelets must be brought in contact with the vessel wall (for a thrombus must be adherent to a vessel wall) retardation of blood current must be considered an important factor in thrombosis.

This characteristic ability of retarded circulation to predispose a vessel to thrombosis is more frequently seen in the venous system than in the arterial. According to Lubarsch venous thrombi are met with four times as frequently as the arterial.[1]

The explanation of this greater predisposition is easy. The slower speed of the blood current, the lower blood pressure, the absence of pulsation, the fixation of the venous wall in certain situations to the fascia and bones, the presence of valves an the flow of the venous blood from smaller into larger vessels, all these physiological pecularities of the venous system tend unquestionably to retard the blood current and thus render the vènous system a more favorable locality for thrombus formation than the arterial system.

The same relation between retardation of blood current and greater tendency to thrombosis is noticed in individual vessels. Such are the vessels, the blood current of which is subject to a more than normal resistance, as the femoral vein passing over the elevated point under Poupart's ligament, such are the vessels that are under constant external pressure as the left common iliac under the pressure of the overlying arteries[2] and the pelvic vessels in general under pressure of the fetal head, such are also dilated blood channels that receive their blood from smaller vessels as the cerebral sinuses and the cardiac chambers.(27) Thus we see that wherever we find in the circulatory system physiological conditions interfering with the normal rapidity of the blood current, we find also in the same place a predisposition to thrombus formation. If this holds good in physio-

[1] Ferge, in the Freiberg Path. Institute, found 76.3 per cent. of venous thrombi to 23.7 per cent. of arterial(27).

[2] The left iliac vein as it is known, is under pressure of the right common iliac (almost at right angle), left hypogastric and median sacral arteries and according to Kistler (Thrombophlebitis of the Left Leg., *J. A. M. A.*, Aug. 10, 1912)(31) also the iliolumbar artery. The right common iliac vein is under pressure of the right common iliac artery only and then under an acute angle.

logical retardation it should be found to be true also in pathological, and it is a clinical fact, well recognized by many that in diseases inducing unfavorable cardiac changes or causing in any way retardation of blood flow, thrombosis is frequently met with. The most striking example of ths is the uterine fibroid, a disease accompanied with unfavorable heart changes[1] and strikingly predisposed to thrombosis. Klein in 12,923 laparotomies found 270 thrombi, Black in 3000 cases, thirty-five thrombi, Mayos in 1788 cases, eighteen thrombi and Herff in 2679 cases eighty-one thrombi or in a total of 20,440 cases, 404 thrombi or 1.9 per cent. After laparotomies for myoma it was found as follows: Zurhelle 2.5 per cent., Fritsch 2.75 per cent., Kelly and Cullen 3 per cent., Werthelm 3.3 per cent., Bouchardt 4.6 per cent., Albanus 4.6 per cent., and Wenczel 5 per cent(27).

Interesting clinical observations have been made by reliable authorities which may be utilized here to confirm the relationship existing between retardation of the blood current and thrombosis. Thus, a long rest in bed weakening the heart muscle and thus slowing the circulation(22) is found according to the observations of Hoffman and Kummel to favor thrombosis(24). Trendelenburg's position with knees strongly bent over the table, slowing, by pressure on the popliteal veins, the circulation in the lower extremities, predisposes to thrombosis according to Olshausen and Zweifel(23).[2] Pressure with abdominal retractors over the branches of the epigastric vein may cause in them thrombosis according to the observations of Clark.[3] Prolonged mental depression weakening the heart force is claimed by some to predispose to thrombosis. Ether narcosis producing secondary heart weakness (Reidell) favors thrombosis the first day after anesthesia according to the observations of Lennander.

Changes in Blood-vessels.—The mere slowing of circulation will not suffice to cause thrombi, for it only brings the platelets into the outer zone of vessels, thus allowing them to come in contact with the endothelium(10). But to get a thrombus we must have an agglutinated mass of platelets adherent to a vessel wall. This can occur only in the presence of a diseased intima of the vessel wall.

[1] It is generally admitted that there is a clear relationship between myoma and fatty degeneration of the heart. Strassman and Lehman found anatomical lesions of the heart in 40.8 per cent. of their myoma cases(27).

[2] Zweifel had no emboli in 1600 laparotomies done in the horizontal position nor in vaginal panhysterectomies, while he had twenty-one cases of embolism in laparotomies in the Trendelenburg position(23).

[3] In a case laparotomized by Clark a second time, three months after the first operation the epigastric vein was found thrombosed(23).

It is universally recognized that the normally smooth[1] endothelium of the vascular wall has a great influence in maintaining the fluid state of the blood, but an abnormality in the vascular endothelium may induce the viscous metamorphosis of the platelets coming in contact with it and permit a platelet mass thus formed to adhere to the abnormal part of the vessel wall. These abnormal changes in the vessel may be extensive, when induced by injury, inflammation, degeneration, or neoplasm or it may be very slight and even microscopic, when induced by impaired nutrition of the endothelium as noticed in anemia, toxemia and chilling of blood-vessels during operations.

The relative importance of blood-vessel disturbances and retarded blood current in thrombus formation is best shown by the fact that while in arteries pathological changes are much more commonly met with than in veins(27), yet, because of the greater current force, arterial thrombi are very rare in comparison with the venous ones. In fact, Lubarsch and Zurhelle studying this question came to the conclusion that, so long as the circulation is strong and the blood cells are not injured, the changes in the vessel wall will not cause thrombus formation.

3. *Alteration in Character of Blood.*—In studying the question of the etiology of thrombus formation, the blood changes met with during the course of the disease must be considered, and here again we want to emphasize the point that the increase or the reduction of fibrin has no bearing on this question and that blood coagulation time has no constant relation to thrombus formation(54).[2] But while coagulation time is of no importance in thrombosis, the increased viscosity or viscous metamorphosis is quite generally admitted to be an important factor. Bachman(27) found that in diseases with high viscosity thrombi are frequently met with. Its relative value, however, at present is not settled.

The blood change that is universally admitted to be present in thrombophlebitis is the increase in the platelet count. While their number per centimeter even in healthy people is not uniform (from 200,000 to 860,000), yet there is a well recognized

[1] In his experiment No. 16, Guthrie of Pittsburg implanted in the course of a rabbit's carotid artery a segment of vena cava hardened with formaldehyde, dehydrated with alcohol and impregnated with paraffin, and this dead piece of vein functionated for twenty-two days with no sign of thrombosis (Adami).

[2] According to Welch, there may be very extensive bacterial inflammation of the venous wall even with bulging of the intima into the lumen without thrombosis(52).

[2] Schimmelbusch succeeded in inducing a thrombus in a dog whose blood he rendered incoagulable by injection of albumose(52).

parallelism between their numbers and the predisposition to thrombosis, *i.e.*, an increase in platelets is found in diseases predisposed to thrombosis and a decrease in diseases in which thrombosis is very rarely or never met with. As an interesting example we will cite chlorosis and pernicious anemia, the first with a high platelet count and a pronounced tendency to thrombosis (Muir), the other with a very low count and the striking absence of thrombosis (Hayem, Birch Hirschfield(54–52). In connection with our subject it is important to remember that there is an increase of platelets at the end of pregnancy, after delivery, during septic infection, in post hemorrhagic anemias and in states of bad nutrition in general [1](52).

4. *Infection.*—We see then, that for thrombus formation the necessary factors are: 1. Blood changes leading to increased number of platelets and viscous metamorphosis; 2. retarded circulation, and 3. vascular changes in the intima. There is another causative agent in thrombosis that must be considered and this is infection. According to Fromme,[2] von Jackowsky, Latzko, Veit and others, infection is the only factor in thrombosis, the factors referred to above being secondary. They cite the experiments of Fromme, von Jackowski and others to prove this view. But their view cannot be adopted by us. Their experiments were either proven to be wrongly interpreted or were entirely discredited by such authorities as Zurhelle, von Bardeleben, Rubesch, Heller [3] and others. Besides, their view cannot

[1] Other examples of the parallelism are: Increase of platelets in erysipelas, meningitis and influenza. In pneumonia the number is increased but in severe cases the number is diminished occasionally. There is also an increase in tuberculosis, various cachectic conditions and during the subsidence of, and early convalescence from infectious diseases such as typhoid fever and pneumonia. On the other hand there is a decrease or entire absence of platelets in purpura hemorrhagica (Denys, Hayem, Erlich), a decrease in malaria and in typhoid during progress of the disease.

[2] Fromme reported in 1908 experiments on rabbits in whose jugular veins he inserted sterile and infected silk threads. He found thrombi only in the ones with infected threads. A year later, Zurhelle disproved it. He, under most careful asepsis, repeated Fromme's experiments. In a large number of cases he found typical blood platelet thrombi whether he used sterile or infected silk threads(54).

Von Jackowsky tied blood-vessels of a rabbit with gum bands; twenty-four hours later he injected into these vessels bacterial cultures and toxins. He discovered afterward thrombi in vessels but the tying of vessels brought about considerable vascular engorgement, injury and alteration to blood-vessel wall. Therefore, there is no indication that the bacteria and thrombi have any cause and effect relation. It is very likely that the bacteria appeared in this case later with the blood stream into the already formed thrombi.

[3] Experiments of Heller(27) with colon bacilli injections into the blood stream and that of von Bardeleben(54) with living streptococcic injections and of Rubesch(45) with staphylococcic gave negative results, *i.e.*, did not produce septic thrombi. If Welch is correct that bacteria by themselves in the blood cannot cause changes in the vessel wall, this alone would explain the reasons for the results obtained by these careful investigators.

explain why we meet thrombosis more commonly after the hysteromyomectomy than after operations for septic adnexa, why thrombi are met with in the venous circulation more frequently than in the arterial, why the left lower extremity is more subject to thrombosis than the right one, why thrombi may develop as late as three and six weeks after an operation and why, in spite of the most careful asepsis in the hands of the best surgeons, thrombosis cannot be eliminated. Again it has been clinically proven that nonseptic diseases with low platelet count, low heart force and badly disturbed nutrition, bring about thrombosis without the aid of sepsis. Such are, for instance, the "quiet" thrombi of Bennett in legs of old people(5), the marantic thrombi[1] met with in wasting diseases, the thrombi of pregnancy before delivery, the afebrile puerperal thrombi[2] and experimental aseptic thrombi.

The presence of aseptic thrombi must, therefore, be admitted. But it should also be admitted that infection is an important factor in formation of thrombi. In fact, local infection by itself may, under favorable conditions, slow the circulation, injure the vessel wall, introduce the necessary blood changes and thus bring about thrombosis. As a rule, however, infection acts only as a contributory factor. If we have, for instance, a retarded blood current and an injured vessel, infection, by its increased blood platelet count and viscous metamorphosis, can supply the missing factor (blood changes) for thrombosis, but it should be remembered in this connection that thrombosis thus formed while usually septic, is not always so. Klein(27) in 215 autopsies on infected puerperal thrombosed cases found microorganisms only in 10 per cent. of thrombi. Here it might not be out of place to call attention to a predisposing factor of thrombosis, named by Felix Mendel(40) thrombophilia or an

[1] Marantic thrombi are met with in infectious diseases and in wasting, cachectic and anemic conditions. True, a large number of so-called marantic thrombi are found on careful examinations to be of infective origin (Vasquez demonstrated bacteria in such thrombi as far back as in 1894), but in very many instances repeated bacteriological examinations yielded negative results in such careful hands as that of Welch.(52)

[2] Bumm(11) speaks of the aseptic thrombus as follows: "There is an aseptic thrombus of the uterine veins in the puerperium that begins at the placental site and extends to the spermatic veins, pampiniform plexus, the hypogastric and iliac veins. If the uterine retraction is normal the venous sinuses are closed by simple contraction of the vessel walls, but in an atonic uterus they are closed by thrombi usually without symptoms. Aseptic thrombi are also found in varicose veins of the leg during pregnancy and the puerperium. Neu, in the Heidelberg Clinic, found seventeen out of thirty-five cases of puerperal thrombosis without fever.(27) Welch has found marantic thrombi without any visible alteration in the vascular intima at the site of thrombus.(52)

individual predisposition to thrombosis. He has noticed thrombi develop in the lower extremities and pelves of some patients from time to time after attacks of slight general infection. He attributes this predisposition to a peculiarity of blood opposite to the one found in hemophilia. His observations are purely clinical and he offers no experimental proof. Nevertheless it is worth while bearing in mind, for it may account to a great extent for some of the unexplainable puerperal and postoperative thrombi.

The Progress of a Thrombus.—A thrombus usually beginning as mural, may either remain as such or by continued growth may fill the vessel and become an occluding thrombus. If the thrombus is sterile it may go on to absorption,[1] organization,[2] canalization,[3] calcification,[4] or bland softening with or without embolism.[5]

In septic thrombi the changes depend a great deal on the virulence of the infecting organism. In mild infections the termination may not be different from that of the sterile ones.

In the severe infections, the bacteria finding a good culture medium in the thrombus, may gradually change it into a purulent mass and give rise, in bad streptococcic cases, to suppuration and even gangrene of the blood-vessel. If an embolus be

[1] A thrombus of moderate size may, through leucocytic activity, undergo resolution and absorption, thus allowing the vascular channel to be restored to its natural lumen. This, of course, is the most favorable termination of a thrombus if embolism does not occur during the resolution.

[2] Organization is a substitution of vascularized connective tissue for the thrombus. As a result of chemotactic irritation leucocytes and so-called migratory cells are attracted into the site of the adhesion. Through their activities the thrombus is slowly disintegrated and absorbed. While this absorption is going on, granulation tissue forms in the thrombus, the cells being derived from the leucocytes, from the endothelium and other fixed cells of the vessel wall, and the new vessels being derived chiefly from the vasa vasorum. This new tissue gradually contracts, converting the vessel into a small contracted mass of fibrous tissue, a fibrous cord with complete occlusion. Such organization ends the danger of thrombus.

[3] The organized thrombus does not always tend to complete occlusion of the vessel. The blood-vessel may only be narrowed at the site of the thrombus. It may present a number or channels of a cavernous structure. These cavernous septa or channels may disappear, restoring the lumen of the vessel with perhaps a few fibrous bands as seen in the normal cerebral sinuses.

[4] In certain regions of the body notably in the uterine plexuses, thrombi frequently become the seat of calcareous deposits and are converted into phleboliths.

[5] Instead of organizing into connective tissue or calcareous substances, the thrombus may soften and liquefy. This process is called also puriform softening because of the mistaken idea about its contents, which was supposed to have been pus. It results from cell digestion by the thrombotic leukocytes or by the migratory cells outside of the thrombus and consists of a brittle shell the interior contents of which are composed of necrotic fatty leukocytes, albuminous and fatty granules, blood pigment and altered red corpuscles. This unorganized condition makes the thrombus a starting-point for bland emboli, with the degree of the danger depending upon the size of the embolus and the importance of the organism to which it is carried.

detached from such a thrombus it may cause metastatic infection, the gravity of which depends on the virulence of the infecting agent, the location of the embolus, and the general resistance of the patient. So much for thrombus formation.

Now, before we take up septic thrombophlebitis, a few words must be said about phlebitis and its relation to thrombosis. A thrombus may exist without a phlebitis, for as referred to above, vascular changes caused by slight injuries or nutritive disturbances are sufficient to permit the platelet masses to adhere to the vessel wall. A phlebitis even when septic may exist without a thrombus for unless the inflammation is very severe and is accompanied with periphlebitis, it supplies only one of the three factors necessary for thrombus formation, *i.e.*, the diseased vessel. When a thrombus is followed by a phlebitis or *vice versa*, a phlebitis followed by a thrombus, a condition known as thrombophlebitis appears, which may be sterile or septic. A nonseptic phlebitis in presence of other necessary factors may give rise to a sterile thrombus thus forming a nonseptic thrombophlebitis.

A septic phlebitis or septic thrombus may respectively induce a septic thrombus or a septic phlebitis and thus give rise to a septic thrombophlebitis. But a mildly septic thrombus may, by its irritative properties, cause a nonseptic phlebitis(52), and again, a mildly septic phlebitis may, in presence of other favorable factors cause a nonseptic thrombus. We see then that not every case of thrombus nor every case of phlebitis is necessarily followed by thrombophlebitis, and not every case of thrombophlebitis is necessarily septic.

Omitting from our further consideration the thrombus and phlebitis as separate entities and excluding as far as possible the sterile thrombophlebitis we shall now take up the septic pelvic thrombophlebitis and attempt to bring out the points that may throw light on the present status of its treatment.

Pelvic Septic Thrombophlebitis.—The most important and to us the most interesting cases of pelvic septic thrombophlebitis are those of puerperal and postoperative origin, and of these the more common are the puerperal ones.

Septic Puerperal Pelvic Thrombophlebitis.—The striking frequency of septic pelvic thrombophlebitis in the puerperium is not difficult to explain. The condition of the blood, the dilated blood-vessels, the torn and gaping sinuses, the presence of bacteria in the vagina and the cervix, the extensive pelvic traumatism,

the prolonged dorsal position and the after-effects of functional disturbances of pregnancy, all these conditions are most favorable for thrombophlebitis.

As mentioned above, not every case of thrombophlebitis is septic, but there is no question that the great majority of cases of pelvic puerperal thrombophlebitis in septic cases are septic. The bacterial agent of this form of thrombophlebitis is most commonly the streptococcus. The rapidity and manner of the extension of this form of thrombophlebitis depends on the degree of the bacterial virulence and the degree of the patient's resistance. If the streptococci are highly virulent, especially if the patient is of low resistance, the infection usually begins as phlebitis. The streptococci enter from the endometrium into the endothelium of the veins and rapidly ascend along the endothelium of the vessels involving in a short time the uterine plexus, the spermatic, hypogastric, iliac, femoral and even the vena cava. Here the septic phlebitis is the predominant primary feature, the thrombus formation being secondary. If suppuration occurs, it begins at the vessel wall extending up and along the intima, the thrombus undergoing purulent changes later. (24–29–11)

In the development of milder forms of puerperal sepsis the veins are found thrombosed prior to the appearance of the infection. The bacteria invading the sinuses attack the thrombus first, and if suppuration takes place it begins in the center of the thrombus, extends toward its periphery, setting up a secondary phlebitis(11).

There is a form of puerperal septic thrombophlebitis that is secondary to lymphangitis. The bacterial causative agent of the lymphangitis may bring about a thrombophlebitis by local extension, *i.e.*, the bacteria found in the area of the septic lymphangitis may attack the neighboring vessels, causing septic phlebitis and then a thrombus. This same bacterial agent may cause thrombophlebitis through the general circulation, *i.e.*, the bacteria may be carried from the lymphatic system into the general circulation, cause the necessary blood changes, weaken the heart force and thus bring about a thrombus in a pelvic vessel that happens already to be injured or diseased. While such a thrombus primarily is usually not septic, it generally becomes so secondarily on account of the presence of the bacteria in the blood. The septic thrombophlebitis thus formed is of course secondary to the lymphatic infection and should be considered only as a complication of still graver an infection, *i.e.*, lymphatic septicemia.

Postoperative Septic Pelvic Thrombophlebitis.—The postoperative pelvic thrombophlebitis, while found in about 2 per cent. of laparotomies, is not as commonly met with in our practice as the puerperal. We do not believe that the postoperative thrombophlebitis is as frequently septic as the puerperal and we certainly cannot adopt the view that pelvic thrombophlebitis is always septic. The higher percentage of thrombophlebitis after myomectomies than after salpingooöphorectomies for infected adnexa, is sufficient to disprove it. Besides, a patient with a weak heart, in a bad state of nutrition, who always shows a high platelet count has all the factors necessary to give rise to aseptic thrombophlebitis if one or more of his veins is injured during operation (by separation of adhesions, by pressure with retractors or by simple chilling). There is no need to add infection as a requirement for postoperative pelvic thrombophlebitis.

But while we cannot consider infection as the only cause of postoperative thrombophlebitis, it is unquestionably the most common one and is almost always local. An infection carried to the cellular tissues around a vein may give rise to a phlebitis and periphlebitis, which limiting the vascular elasticity causes local slowing of circulation. An endophlebitis with consequent damage of the intima usually follows in such cases, bringing about a vascular condition necessary for the attachment of the platelet masses. If now the necessary blood changes are present in the circulation, from one of the many possible causes septic thrombophlebitis develops.(23)

It should be remembered here that in the postoperative just as in the puerperal septic thrombophlebitis, bacteria are not always found in the thrombus. In fact it is not always caused by direct action of the bacteria. For, while streptococci enter the lumen of the vessel to bring about a thrombus, the staphylococci and colon bacilli bring about a thrombus through the actions of their toxins and the products of decomposition. Here we may find an explanation for postoperative thrombophlebitis in clean cases with mild general symptoms. In separating bowel adhesions in such cases, the colon bacilli may find entrance into the perivascular tissues and by their toxins cause thrombophlebitis in the manner shown in Rubesch's experiments.[1]

[1] Rubesch's(45) experiments on animals with staphylococci and Heller's with colon bacilli show that even if these bacteria are deposited near the surface of the vessel wall, thrombi are found on the intima before the bacteria have a chance to invade the entire vessel wall. In such thrombi no bacteria can be discovered, their formation having been caused by bacterial toxins permeating the venous walls.

Speaking of septic thrombophlebitis we must distinguish between the acute on the one hand and the subacute and chronic on the other. This distinction is based on the extent of the gravity of the infection. The graver forms show an earlier onset, severer symptoms, more rapid progress and higher mortality. The milder forms show a later onset, milder symptoms, slower progress and a much lower mortality. The first type is the acute one, the second the subacute or chronic.[1]

Acute Pelvic Septic Thrombophlebitis.—In our study of septic pelvic thrombophlebitis we shall discuss chiefly the acute type, referring only here and there to the chronic type wherever its distinctive features demand it.

Symptomatology.—If we bear in mind the rapid progress and high mortality of acute septic thrombophlebitis, we can easily understand the importance of recognizing it early, for the energetic treatment such a disease demands, must be undertaken early if results are to be expected. To do this we must have an early diagnosis. But can we do it? Mahler speaks of a prodromal symptom consisting of a climbing or step-ladder pulse with a temperature remaining normal. Michaelis(32) speaks of a subfebrile temperature, meaning low rise of temperature between 99 1/2° and 100°. Each of them considers his symptom pathognomonic of oncoming thrombosis. If such symptoms could be found they would be of great value but unfortunately only a small number of authors confirm Mahler's and Michaelis's claims, most of them discussing these symptoms either deny their existence entirely or consider them rare. These prodromal symptoms therefore cannot be relied upon, although it is worth while bearing them in mind and to take advantage of them when they do appear.

The clinical phenomena of thrombophlebitis after its onset vary with the degree of the severity and the rapidity of the extension of infection. In mild forms, the subacute and chronic types, the symptoms may be so mild as to make the early diagnosis by clinical symptoms impossible.

The characteristic symptomatology of thrombophlebitis is best seen in acute cases. In the acute cases observed by us, all early cases, the clinical symptomatology at the time of the pelvic examination was not sufficiently characteristic to determine the diagnosis. It was the detection of the thrombosed

[1] The sterile thrombophlebitis is mild and often unrecognizable and does not come under the subject of our diagnosis.

veins of the uterine plexus at the pelvic examination in conjunction with the absence of any other palpable pelvic pathology, with the presence of general symptoms of infection, that settled in our minds the diagnosis. Of the clinical symptoms that are now considered more or less characteristic and that were found in our acute cases to be more or less constant, the most valuable ones are the severe, frequent and irregularly repeated chills, some lasting as long as fifty minutes. The frequency of the chills in the beginning at least, did not in our cases necessarily indicate a grave outcome. A case that within one week after the first chill reached a normal pulse and temperature had nine chills during the seven days.

Another feature in the symptomatology that is considered rather characteristic and was found to be so in our cases is the temperature with its irregular pronounced remissions. A sudden rise of temperature accompanying the chill is followed within a short time by a rapid fall to its previous level where, with slight remissions, it remains until the appearance of the next chill. It is not uncommon for the temperature to go up during the chill to 106° and go down to about normal in half a day.

As to the pulse rate in our cases, it was found rather lower than one would expect judging from the temperature. In a case of ours that terminated favorably, the highest pulse was 120 and when the temperature registered 105 and 105.2° the pulse was 96 and 108 respectively. In this particular case, the pulse, in spite of the good behavior during the height of the disease, became intermittent during convalescence.

An interesting symptomatic feature of the disease is the absence of pain. This is not due to mental dulness, for clearness of mind is rather a general symptom of septic thrombophlebitis. The patient as a rule does not suffer and feels comfortable except for a short time during and immediately after the chill when she is desperately ill.

Edema of the lower extremities was always met with in cases of extensive thrombophlebitis, the extent of the edema depending on the severity of the pelvic thrombophlebitis. In one case that was fatal the right leg was swollen to almost three times its normal size and in another case the upper parts of both thighs, both hips, the lower part of the abdomen and the vulva were involved.

The blood picture was not found to be characteristic. Our blood cultures were most frequently negative. Such findings

can easily be explained. The bacteria only entering the blood stream at intervals, are rapidly destroyed in the blood and the various organs of the body. Examinations, therefore, made more frequently and in more carefully selected moments should give better results. In fact Lenhartz claims to have obtained thirteen positive cultures in sixteen cases, his success, however, as far as our knowledge based on literature is concerned, has not been duplicated. So far as leucocytosis is concerned it does not seem to depend so much on the severity of thrombophlebitis itself as on its complications. The erythrocytes and the hemoglobin are always low on account of the hemolysis. The influence of septic thombophlebitis on the kidneys does not seem to be pronounced. Albuminuria was found strikingly absent except after the appearance of septic involvement of the kidney.

The complete symptomatology of the thrombophlebitis as given above is not found in every case. If the thrombophlebitis can be mapped out by palpation,[1] a diagnosis can be made no matter how incomplete this symptomatology may be (lymphangitis being the only condition to be excluded) but if it cannot be mapped out, a sufficient number of characteristic symptoms, above referred to, must be had before a diagnosis of septic thrombophlebitis can be made.

There is a symptom-complex which if found, may make us feel reasonably certain of the diagnosis of puerperal or post-operative septic pelvic thrombophlebitis even in absence of palpable pelvic veins. This symptom-complex we may describe as follows: A fairly good general condition, with slightly elevated pulse and temperature, with clear mind and good appearance, interrupted at various intervals by irregular intermissions of desperate disturbances consisting of a severe chill, with a pronounced rise and characteristically rapid fall of temperature, with a comparatively slight rise of pulse, and with a pronounced general depression.

Prognosis.—If a case is diagnosed as that of septic thrombophlebitis, how are we to take care of it? What mode of treatment should we choose? In order to obtain a better under-

[1] In our experience the palpation of thrombosed veins of the uterine plexus is easy, that of the ovarian is not easy. We are not speaking of the chronic ovarian thrombophlebitis with extensive periphlebitis that one may feel through an abdominal wall of moderate thickness, we are speaking of its acute form. We must say here in a general way that a thrombus of the uterine plexus is easy to be diagnosed early by pelvic examination even before the appearance of characteristic chills, while thrombosis of ovarian plexus is difficult to diagnose early; the early diagnosis must be made chiefly by symptomatology. If our view is correct, thrombophlebitis of the uterine plexus should and will be diagnosed earlier than that of ovarian plexus.

standing of the value of the different modes of treatment, let us first discuss the prognosis of the expectant and operative treatment, for on the prognosis must, to a great extent, depend our judgment as to the choice of treatment.

The prognosis of thrombophlebitis of course depends on the severity of the infection and the resistance of the patient. In mild cases, subacute and chronic, the infection may remain localized and the thrombophlebitis may undergo one of the favorable changes mentioned above, with or without embolism. In severe cases, the acute ones, the cases that we are mostly interested in, the mortality is high. Arnold W. W. Lea(32) collected 566 nonoperative cases of thrombophlebitis pyemia with 327 deaths. If we add to this Latzkos' own nonoperative 199 cases of septic thrombi, with sixty-eight deaths, we get a total of 765 cases with 395 deaths or a mortality of 51.6 per cent. Of course if the statistics of the milder cases that now pass unrecognized would be obtained, the mortality of nonoperative thrombophlebitis would in all probability be found to be much lower.

Now the mortality of operative cases, no doubt, must be higher at present than it will be in the future when the diagnosis will be made earlier. But we have no other way to judge rightly statistics except as they appear in their cold figures. The number of operations at our disposal at present may be too small to make deductions from them, but if we are to use them at all we must use them as we do in any other diseases or operations, that is, count all we have. Now counting them all, we find the following:

Williams' collected cases including his own five(53)	52[1]	with	28 deaths.
Latzkos' own cases	37	with	21 deaths.
Huggin's collected cases including his four with one death(25)	25	with	13 deaths.
The writer's collected cases	8[1]	with	2 deaths.
Total	122	with	64 deaths.

		Cases.	Deaths.
J. W. Taylor(49), 1905.	Vaginal	3	0
A. A. Landin(28), 1906.	Transper. lig. of rt. ovar	1	0
W. B. Bell(4), 1909.	Trans. excis. of rt. ovarian	1	1
H. D. Bishop(6), 1909.	Trans. excis. of rt. ovarian	3	1

Thus we get a mortality in operative thrombophlebitis cases of 52.4 per cent.

If these statistics based on only 122 cases are of any value, they show the mortality of operative thrombophlebitis to be higher than the nonoperative. While the lack of experience

[1] We deducted from Williams' statistics four of Latzkos' cases with three deaths. that we give under Latzkos' own statistics.

and the unwillingness on the part of the patient and the hesitancy of the profession to adopt early surgical measures account to a great extent for the high mortality of the operation, yet at the present stage of our experience it is difficult to say what the mortality will be in the future. Cases may be operated on early and die, in whom under expectant treatment the thrombus might have undergone absorption, organization, calcification or even softening with favorable termination.

With such a prognosis in operative and nonoperative cases we cannot help but believe that the prophylactic and expectant treatment must for the present occupy a very prominent position in the care of this disease.

Prophylactic Treatment.—We saw that in the formation of thrombus, the necessary factors are: 1. increase in number and agglutinability of blood platelets; 2. retardation of the blood current, and 3. pathological changes in the intima of a blood-vessel. We saw also that in septic thrombophlebitis, in addition to the above, infection must be added as a very important factor. It is easily seen that the prophylactic treatment of septic pelvic thrombophlebitis should consist in measures directed toward avoiding or correcting these factors. So far as the blood changes are concerned, we have at the present state of our knowledge, no measures to control them. "If it were possible, says Zurhelle, "to reduce the agglutinability of the platelet, as great deal of good could result from such measures, but we are not in possession of such measures."(54) We doubt, however, that measures directed to diminishing the increased number and agglutinability of platelets are desirable because platelet changes are beneficial when abnormal conditions need their protection. In this connection it should be remembered that even the thrombus is a natural conservative process, for a septic parietal thrombus is a temporary shield plastered on an injured vessel wall to prevent either the bacteria and their toxins from entering through it into the general circulation, or to prevent the bacteria and their toxins already in the circulation from attacking it. The same is true of the occluding thrombus. It is also protective in character. It is a temporary cork in the vessel lumen keeping the circulation away from the diseased vessel or corking up the infection in a limited area for the protection of the general circulation. There is no reason therefore to look for measures to combat this increase in numbers and agglutinability of platelets. Prophylactic here consists in correcting the abnormal

conditions calling for this increase, such conditions being chlorosis, posthemorrhagic anemia, convalescence from infectious diseases, cachexias and bad states of nutrition in general. Therefore if any of these conditions be present before delivery or before serious operative procedures, they must be taken care of by such prophylactic measures as good nourishment, tonics, rest, fresh air, etc.

So far as preventing the retardation of the circulation is concerned, the prophylactic treatment consists in adopting measures to increase the weakened heart force and to avoid anything tending to diminish this force. If a patient before delivery or operation shows a lessened heart force it should be toned up and strengthened by rest, therapeutic agents, etc. While Jaschke(26) may be right that endocarditis with good compensation, especially in young people with normal blood count, needs no preoperative attention, it must not be overlooked that a diseased heart cannot accommodate itself to the strain and shock of an extensive operation as well as a good heart. For this reason it may in such cases be a part of good prophylaxis to avoid performing extensive operations at one sitting, also to avoid prolonged anesthesia and to make every effort to allay preoperative fear and excitement. As a prophylactic measure against lowering heart force may be considered the free movements after operation and labor, especially the early getting out of bed. This allows the organs to resume earlier their normal functions, the circulation to become more active, the blood pressure to reach a more normal level and all this to increase the heart force. There are plenty of clinical facts to prove this statement. While statistics give 1 to 2 per cent. of postoperative thrombophlebitis, the surgeons allowing their operative patients out of bed early show a much lower percentage in their cases. Thus Reese gives .4 per cent., Boldt .3 per cent., Mayos 1/3 per cent., Kroenig and Doederlein none(32). Of course this early sitting up after operation cannot always be carried out. Just as good judgment must be used in carrying out this prophylactic measure as in other lines of treatment. It would be poor judgment for instance to allow out of bed early a septic case with a high temperature, an acutely anemic case after a severe hemorrhage or a case with drainage through an abdominal incision, but in the great majority of cases this prophylactic measure can be enforced with great benefit. So much for prophylactic measures against retardation of blood flow.

The prophylactic measures against the third factor of thrombophlebitis (the injury of the vessel wall) are but few and in general this factor is beyond our control. Care, however, can be practised during operation to avoid injuries to vessels wherever it is possible. Profiting by the observations of Clark and Zweifel referred to above, we may be careful to avoid pressure by abdominal retractors on the epigastric veins and also pressure on the popliteal veins, the result of prolonged Trendelenburg position with bent knees.

The most important, most practicable and most efficient measures against septic thrombophlebitis are the ones directed against infection. They consist of course in careful observance of asepsis in obstetrical and pelvic operative procedures. With the present state of development of asepsis, and especially with the easy access of surgeons to the aseptic technic of the operating room, this prophylactic measure can be easily enforced. When one considers that in 6000 consecutive labor cases of von Herff's clinic there was no death from sepsis and that in 8000 cases in Ahlfeld's clinic there was only one death(32), the infection in this case being carried in by the patient herself, there can be no doubt that this prophylactic measure of thrombophlebitis can be successfully carried out.

It should be remembered, however, that in septic puerperal thrombophlebitis the infection is not necessarily carried in from the outside for the vaginal lochia according to Bumm and Seigert(32) was found to contain streptococci in from 50 to 75 per cent. of cases and the cervical lochia in 17.6 per cent. of cases. If therefore retained membranes or placental tissue project into the cervix or vagina they may carry infection into the uterus without any external aid. The same may be true of lacerations. Bathed in septic lochia, they may carry infection into the circulation without outside interference. As a prophylactic measure against the infective agent of septic pelvic puerperal thrombophlebitis must also then be given the complete evacuation of the uterus and the repair of lacerations.

Expectant Treatment.—The comparison between the mortality of the expectant and the surgical treatments of thrombophlebitis led us to state that the expectant treatment at present must be favorably looked upon. Now the chief dangers of septic thrombophlebitis are embolus, secondary organic changes and exhaustion.

Emboli become detached most commonly from thrombi that

undergo purulent softening. Not all septic thrombi so changed give off emboli and not all emboli are fatal. Again, not all septic thrombi undergo purulent softening. We do not know what percentage of septic thrombophlebitis undergoes the favorable thrombotic changes discussed above, but we have every reason to believe that it is high. Just as a septic exudate frequently terminates in absorption or in an aseptic connective-tissue formation, so may a septic thrombus terminate in absorption or in one of the favorable formations seen in the sterile thrombi. The frequency with which we meet phleboliths in the pelvic *x*-ray pictures should prove this point. In more than 50 per cent. of *x*-ray plates taken in Mayo's clinic for diagnosis of renal or urethral stone, phleboliths were found. If we could add to the number of patients in whom phleboliths were found the number in whom the thrombi were absorbed or had undergone organization, canalization, and softening the percentage would be a great deal higher. It would appear from these observations that thrombi in the pelvic cavity are almost general. Of course most of these thrombi must be sterile, but there can be no question that quite a number of them at one time or other were septic.

Not only the thrombus but the phlebitis as well may undergo favorable changes. There is no reason why it should not undergo the reparative changes that are commonly seen in the different tissues. The progress then of thrombophlebitis may under favorable conditions, lead to a favorable termination. If it were possible for us to find and induce these favorable conditions, a successful expectant treatment could easily be outlined. Let us see then what are the favorable conditions that can be induced.

In our expectant treatment we have to take into consideration the infecting bacteria, the thrombus and the phlebitis. If we could eliminate the infection a great element of the danger could be excluded. Infection could be excluded by the destruction of the bacteria, but in the present state of our general therapeutics, even of vaccin and antitoxin therapy, the bacterial agents of thrombophlebitis cannot be destroyed. While this is true, yet, we can to a certain extent increase the bac ericidal powers of the patients' blood, (phagocytosis, opsonins, etc.) by increasing her body resistance. Herein lies the first principle of the expectant treatment of thrombophlebitis, for by increasing this resistance, we may increase greatly the reparative power

of the inflamed veins and thus reduce or eliminate the danger. Of course this does not eliminate the possibility of embolism. Emboli can be detached at any time but this detachment is especially favored by increase of pressure behind the thrombosed portion of the vessel. Such increase of pressure may be brought on by disturbance of the organs involved in the thrombophlebitis, as by motion, pressure, rubbing, etc., or by sudden increase of heart action, as by stimulation, excitement, exercise, or inrease of blood pressure from any cause. Herein lies the second principle in the expectant treatment of septic thrombophlebitis. For by keeping the diseased parts at rest, the heart action and blood pressure at their even and normal level, we can easily avoid the disturbance of the thrombus, allowing it under the increased body resistance to undergo the possible favorable changes without detachment of emboli. Having these two principles in view, we can outline an expectant treatment which, while not ideal is at least rational. It consists in adopting measures to increase body resistance, to keep the parts involved at perfect rest and to keep the circulation and blood pressure at as even and normal level as possible. These measures are: A nutritious diet, tonics (cardiac stimulants to be avoided as much as possible), careful attention to the eliminating organs, sleep, avoidance of all excitement, perfect rest of the part involved in the thrombophlebitis and strict avoidance of pelvic examinations, of treatments such as douches, enemas and of such nursing at that attended with rough handling of the patient.

Such expectant treatment should give fairly good results, but septic thrombosis in spite of this treatment must show a high mortality, for a virulent type of streptococcic infection especially in a puerperal uterus, spreads so rapidly along the endothelial surface of the pelvic veins that neither ordinary body resistance nor perfect rest can control it. It can easily be understood, therefore, why the surgical mind turned to surgical procedure for remedies to combat septic thrombophlebitis.

Surgical Treatment.—Stimulated by the success the otologist attained in lateral sinus pyemia by ligation of the internal jugular veins, gynecologists introduced a similar procedure in pelvic septic thrombophlebitis. This procedure has so far not been received enthusiastically by the pelvic surgeons. Eighteen years have passed since its introduction to the gynecological mind by Freund and only 122 cases could be collected by the

writer from a rather extensive reading of the literature on this subject. As at present practiced the operation is performed through the abdominal and vaginal routes and consists in the ligation of the infected veins (with or without a phlebotomy) or in the excision of the vein. We shall first consider these different methods and then discuss their remedial value in the treatment of thrombophlebitis.

Abdominal Route.—The extraperitoneal abdominal route has been recommended highly by Trendelenburg, von Herff, Lenhartz and others. This method has recommended itself especially in purulent thrombi because of the possible avoidance of peritoneal infection from septic thrombi. Even Bumm, who is strongly in favor of the transperitoneal route speaks favorably of this method for unilateral septic ovarian thrombus.(24)[1] But this route has objections. It requires two incisions in a bilateral involvement. It necessitates extensive dissection with danger of infection of the lymphatics. It gives us a deep wound making the veins inaccessible and therefore difficult to expose, differentiate and inspect. For this reason mistakes are not infrequent. Williams(53) in his collection of fifty-six cases shows that Lenhartz in his eighth extraperitoneal operation tied off a ureter while ligating the left spermatic vein, ligated twice the pudic for the hypogastric vein and in one of these two cases ligated also a small vein for the spermatic. Another disadvantage of this route is its high mortality. C. J. Miller(39), cites 40 per cent. mortality for the extraperitoneal and only 21.66 per cent. for the transperitoneal route. Williams collected fifteen extraperitoneal cases with a mortality of 80 per cent.(53.)

The intraperitoneal route is the one strongly advocated by Bumm(11) and has more followers than any other route.[2] The

[1] An incision is made about 1/2 inch from a parallel to Poupart's ligament, dividing the skin, muscle and fascia. All the structures including the peritoneum are then reflected inward until the brim of the pelvis and the iliac veins are exposed. The exposure of the ovarian veins is easy, but that of the hypogastric veins, in case of inflammatory exudate in the broad ligament is extremely difficult. The possible injury to the ureter is also extremely great.

[2] A median incision is made and search is made for thickening or infiltration along the course of the ovarian and hypogastric veins. If found, the presence of thrombosis at the seat of infiltration is almost certain. In case of ovarian thrombosis the peritoneum is incised over the vessel, an aneurysm needle is passed under it and the vessel is ligated as far above the thrombus as practical. In case of thrombosis of the hypogastric vein it is necessary to draw the uterus firmly over to the opposite side, finding the hypogastric vein on the inner side of the artery. The peritoneum is divided exposing the vein which is then ligated close to the entrance into the common iliac. The median iliac, if present, should be ligated at the same time. If the ligation is high, it may, in order to expose the field of operation, demand considerable eventration with its consequent shock.

advantages of the transperitoneal method are: The vessel can be readily inspected, traced and isolated, making it comparatively easy to decide which vessels and how far they are thrombotic and where and how to ligate or excise. Mistakes, however, are possible even by this method, for such an experienced operator as Leopold ligated the hypogastric artery for the iliac vein (33). By this route the ureter can be kept in sight better than the extraperitoneal route and therefore injury to it can better be avoided during the operation. By this method a thorough inspection can be made of the pelvic organs, a bilateral ligation or excision and if necessary operations on the pelvic organs can be performed at the same time. Retroperitoneal infection or infection of the peritoneum itself can be discovered, that might be overlooked during an extraperitoneal operation. The mortaility does not seem to be as high as in the extraperitoneal route. Williams(53) analyzed forty-one cases done by the transperitoneal route, with a total mortality of 43 per cent. while as mentioned before, in fifteen extraperitoneal cases there was a mortality of 80 per cent.

Ligation with panhysterectomy for early acute thrombophlebitis cases had been advised on the grounds that in such cases a septic endometritis and metrophlebitis usually exist. Ligation alone, by not removing the dangerous pathology, cannot relieve the condition. Opitz and Lenhartz(42) found pus in the uterus in most cases of chronic pyemia, especially in thrombophlebitis of the hypogastric vein, and therefore advise in acute cases hysterectomy with the ligation of the hypogastric vein. Latzko(30) reports thirteen hysterectomies (three without ligation) with eight deaths or a mortality of 61 per cent., which compares favorably with that of simple ligation in acute cases. Bumm(11) speaks against hysterectomy for acute cases stating that the operation is useless, but a 39 per cent. recovery makes the operation seemingly worth while to undertake.

The Vaginal Route.—Thrombosed veins of the uterovaginal plexus can sometimes be reached by the vaginal route. Usually only a phlebotomy is performed and drainage is established through the vaginal incision.[1] Taylor of Birmingham(49), who

[1] An incision is made over the thickened thrombosed vein, felt through the vagina and carefully avoiding the uterus. The veins are exposed, ligated if possible, the blood clots are turned out and drainage is established through the incision A search is made through the incision for any pockets of pus about the vessel and if found an additional drainage is established. As Latzko puts it, the effect of this incision is similar to the one the otologist achieves by making the jugular skin fistula of Alexander, (49).

suggested the operation, reported three cases with three recoveries (1905). Latzko reported ten cases with five deaths, a total of thirteen cases with five deaths, or a mortality of 38.4 per cent.

Ligation and Excision Compared.—A question of great importance in the operation is whether ligation of the vein above the thrombus is sufficient or excision of the vein between two ligatures must be practised.

The choice between these two methods depends a great deal upon the length of time from the beginning of the disease and on the seat of the disease. Ligation is the simpler, safer and easier. The results obtained by ligation are: 1. The checking of the extension of the infection; 2. prevention of metastasis; and 3. drainage of bacteria in a local area(53).

In acute cases according to Bumm(11) ligation is of no use. It should be remembered that in septic thrombophlebitis the venous wall may be involved by septic changes for a considerable distance above the thrombus, and if the vessel is tied a short distance from it, the clot that forms on the proximal end of the ligature will surely be septic(5).

As to the vessel to be ligated, some advise the ligation of the vessel involved only, others advise the ligation of all four vessels (Bumm(11) and von Bardeleben(2)).

There can be no question that excision is the better procedure in case of purulent softening of the thrombus (the excision to be done with the cautery knife). It prevents the passing of septic material into the collateral circulation, for as G. R. Noble(41) puts it, "A ligature is a poor barrier for a flood of pus dammed up behind it." But excision is exceedingly dangerous and difficult in thrombophlebitis of the hypogastrics and common iliacs. Literature does not report such cases as far as we know. Both Bumm and Trendelenburg(29), while considering the extirpation of the veins desirable, state that it is possible only with the spermatic veins.

In a number of the ligation cases phlebotomy was performed. The phlebotomy after ligation of course is possible only in the ovarian thrombophlebitis cases and then only through the extraperitoneal route, but as Haeckel(20) justly says, "The danger of retroperitoneal infection and the imperfect drainage makes it a poor procedure." Latzko performed fourteen phlebotomies after a preliminary ligation. Ten of these cases died, giving a mortality of 71.4 per cent.(30).

It is interesting in this connection to call attention to the operation suggested by Trendelenburg for removal of emboli from the pulmonary artery. He operated twice. With the first case he failed completely. The second case lived fifteen minutes. Sievers reported a case in which he removed two emboli from the pulmonary artery. The patient lived fifteen hours though there was no heart action noted during the operation. Kongers reported a case that lived five and one-half days and died of infection.

Comparing the mortality of the expectant and operative treatment of septic pelvic thrombophlebitis, one might justly be led to look with disfavor on the present operative procedures. But the last word on this treatment has not yet been said. If we, as a profession will give up every new surgical procedure that starts out with a high mortality, the progress of surgery will be very slow. The early mortality of fibroid operations was more than 30 per cent. and yet it is now considered one of our greatest surgical triumphs. Let us take the view that a surgical procedure that is rational must not be given up in its beginning because of its mortality. The ligation of a vein above the seat of a septic thrombophlebitis, checking its septic extension, preventing its metastasis and changing it into a local infective process is to a great extent a logical and rational procedure. But while it is logical and rational and justifies us in giving it a trial, in spite of the high mortality, we must always bear in mind its objectionable features, of which the most serious are the following.

1. Lymphatic infection may accompany thrombophlebitis or may even be its causative factor. The ligation or excision of the veins will not stop such pelvic infection.[1]

2. Early in the disease and even later there may be in the pelvis a number of slightly inflamed veins with small unrecognizable mural thrombi. Left undisturbed these septic foci will keep up the infection in spite of the operation. The postoperative histories and autopsies prove this.

3. In severe infections the septic phlebitis may extend far above the thrombosed portions of the veins. The ligation or excision of the vein even at a distance from their thrombotic portions may not include all the infected part or parts of the vein and therefore may not check the progress of the disease.

[1]Grossman in fifty-one septic cases found fourteen thrombophlebitis cases, twenty-four lymphangitis and thirteen mixed. Thus in twenty-seven cases of thrombophlebitis there were thirteen or about fourty-eight per cent. accompanied by lymphangitis. This percentage is rather high but it indicates how frequently in one's experience lymphangitis may complicate thrombophlebitis.

4. The operation itself presents difficulties that lead to serious consequences even in the hands of experienced operators. The operation requires handling of the thrombosed vessels making it possible for emboli to detach themselves from the thrombus, with all the dangers incident to such occurrences. The veins cannot always be recognized and isolated even by experienced operators. Wrong veins were ligated, ureters were included in ligation, an artery was tied for a vein by such an expert operator as Leopold, and the same surgeon was compelled to give up the ligation because of the difficulty of separating the iliac vein from the artery. Again, ligation alone is frequently an incomplete procedure, and excision is impractical in the iliac vessels. To the operative difficulties we may add the fact that usually the patient herself is a very bad subject for operation. These are the disadvantages that we must bear in mind in deciding our choice of treatment. At the same time we must remember that if the thrombophlebitis be left alone the septic vein may undergo favorable reparative changes and that the thrombus itself may undergo resolution, organization, canalization or phlebolithic transformation and thus become harmless.

Conclusion.—As we have said above the operative statistics do not compare favorably with that of the expectant treatment[1], but better acquaintance with the early symptoms of thrombophlebitis and lymphangitis, better recognition of the pathological characteristics of the septic thrombosed vessels, and improvements in technic may in the near future give the operative treatment a great many advantages over the expectant treatment as presently practised.

With the hope of contributing to the development of the diagnosis and surgical technic of septic pelvic thrombophlebitis, the gynecologists might feel justified in utilizing this procedure in the treatment of these cases, but in what class of cases one should adopt this procedure is not easy to definitely state. So far as the writer is concerned he feels at present that one is justified in undertaking the operation under the following conditions.

1. When a thrombophlebitis is diagnosed by vaginal examination before the appearance of chills, especially in the absence of pain (lymphangitis is usually accompanied by pain). Ligation by the transperitoneal route of the two veins of the side involved or of all the four veins if both sides are involved, should be the

[1] The gynecologists therefore have at present sufficient reasons for being slow to give up the expectant for the doubtful surgical treatment.

operation of choice, for in such cases the venous infection may be localized and by ligating the veins the extension of infection may be overcome.

2. In chronic septic thrombophlebitis when the general condition of the patient between chills is fair, when there are no coincident or complicating conditions, making the operation useless. In such cases the operation may consist of a transperitoneal ligation and in case of purulent softening and periphlebitis, an additional extraperitoneal incision and drainage. This with our present state of technic is practical only in the chronic ovarian thrombophlebitis.

3. As a procedure of last resort in any acute case unless it be definitely known to terminate fatally. While this class of cases will give a high mortality an occasional favorable result may be expected. The operative procedure will of course depend on the extent of the disease and the condition of the patient.

4. In acute cases with palpable veins, that come under observation after a number of chills with general condition between chills fair but getting gradually worse. Here, ligation of all four vessels with or without a panhysterectomy depending upon the patient's general condition, might be indicated.

5. In acute cases without palpable veins in presence of the symptom-complex above referred to and with a fair general condition. Here, for the present during the experimental stage of the operation, ligation with or without hysterectomy might be practised.

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PARK BUILDING.

DISCUSSION ON THE PAPERS OF DRS. FINDLEY AND SANES.

DR. R. R. HUGGINS, Pittsburg, Pa.—This subject is too interesting to let it pass without some discussion, and for fear

that I may appear too enthusiastic about operation in certain instances, I would like to say that I believe there are a large number of cases that recover without operation; that we find many mild cases of septic thrombophlebitis that recover under palliative treatment. On the other hand, my own personal experience shows six cases of the severe form in the last twenty years with five deaths under palliative treatment. Having this record, it seemed I could not make it much worse, and I decided two years ago that in the next case of septic thrombophlebitis I would explore the abdomen, see what was the matter, and if possible ligate the vessels. I did this, and the patient recovered. Since that time I have had three other cases, a total of four with three recoveries.

There are only three points for discussion: the first is the diagnosis, the second, the indications for operation, and third, the technic. In regard to the diagnosis, there seems to be a good deal of doubt on the part of the medical profession as to our ability to make a diagnosis in these cases. I believe there is a picture which is almost typical clinically of thrombophlebitis in the vast majority of instances. If there is a temperature such as is portrayed on these charts, with marked remissions, varying from a high point to almost normal or below, accompanied by chills and corresponding variations in the pulse rate, when the temperature is low the patient feels well and looks fine, but when the temperature goes up, there is a corresponding rise in the pulse and an increase in the severity of her symptoms, we are justified in suspecting the presence of this variety of infection.

How are we able to differentiate this form of infection from septicemia, which is the one thing with which it is most likely to be confused? As a rule, in septicemia, we do not find the wide fluctuations of temperature and frequent recurrence of chills. We do not have the intervals of apparent improvement, and the symptoms in every way seem more grave than in the early days of thrombophlebitis. The blood cultures in the latter are almost always negative, especially in the early stage, unless complicated by a septicemia. I believe that in nearly every case of septicemia, with the employment of good technic, the bacteria are found in the blood stream. To sum up in a case of this kind, going on day after day, with recurrence of chills, negative blood cultures, and the absence of local signs pointing to a lymphangitis or peritonitis, my belief is that an exploratory operation should be done. As to the technic of the operation, the abdomen should be opened in the midline which will give a good view of the veins and abdomen. In my experience, this had not done the patients any harm. If an accompanying lymphangitis is found, I see no reason why its presence forms an objection to operation, because there is no place in the body where infection is more dangerous, if allowed to progress, than in the lymphatics in the retroperitoneal space. If the veins are found thrombosed they can be ligated from within more easily than by the extraperitoneal

method. The abdomen can then be closed and if drainage is necessary, it is not difficult to make an extramedian incision, push the peritoneum forward, and drain behind the peritoneum to the region of the kidney, or downward into the pelvis, behind or between the layers of the broad ligament.

SOME OBSERVATIONS ON ECTOPIC GESTATION WITH REPORT OF EARLIEST RECORDED TUBAL OVUM.

BY

SAMUEL W. BANDLER, M. D.,

New York City.

(With Seven Illustrations.)

A YEAR ago a hospital case was under my observation for several days. From the history, one of the conditions which had to be considered in the differential diagnosis was ectopic gestation. Examination showed some enlargement but no sensitiveness of the tube. There was so little that was characteristic of tubal pregnancy that no definite diagnosis was made. This patient, as is the case with many patients with this history, was kept under observation for ten days to two weeks, and was examined on at least two subsequent occasions. The mass seemed smaller on each examination. The patient seemingly improved; a diagnosis of slight tubal inflammation was considered justifiable. The patient was allowed to leave the hospital. She came back after an interval of two weeks and was operated upon for internal hemorrhage due to the previously unrecognized (not diagnosed) tubal gestation. I made up my mind that an occurrence of this sort should never happen to me again; that in every doubtful and suspicious case, instead of waiting and watching for several days for further symptoms to manifest themselves, I would make a vaginal incision and learn whether any blood was present in the peritoneal cavity or better still, see with my own eyes the exact condition of the tubes. In many of such cases kept under observation, further internal bleedings of a greater or less degree make the diagnosis definite by producing or organizing an hematocele or by producing a hemorrhage of such an active nature that constitutional symptoms result. The symptoms of hemorrhage vary with the individual. The signs of shock are not always in proportion to the amount of blood in the abdomen and not always in proportion to the rapidity of the hemorrhage. I recall a case where the patient's previous history and local findings made the presence

of an ectopic gestation certain, yet I had the greatest difficulty in persuading the physician to permit me to take the patient to the hospital for observation. On reaching the hospital her color, and not her general condition, warranted an immediate operation; yet her pulse was only 80, and true to the promise that I had previously given, I made a vaginal incision first to make sure of the diagnosis. The blood flowed out so rapidly from the incision into the peritoneum that I could not have finished the operation per vaginam had I been so minded which I was not.

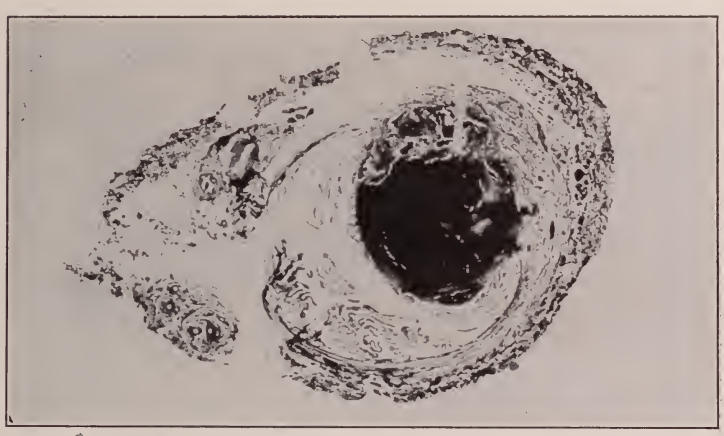

FIG. 1.—Represents the half nearer the fimbriated end = *one lumen.*

A pulse of 80 with plenty of fresh blood and plenty of active bleeding going on in the abdomen is by no means rare.

An operation is often performed on the principle that, whether the patient be suffering from an ectopic gestation or an inflamed or diseased tube and ovary, operation is at any rate justifiable. This may be perfectly justifiable when bimanual examination shows something tangible, yet in many cases only the history and not constitutional signs point in the direction of ectopic gestation and the history so often creates the thought of incomplete abortion. In principle and from a scientific standpoint this is wrong, especially when we have at our command a method so simple as colpoceliotomy, a method which assures us of a definite diagnosis, a method which in many instances allows us to readily and safely complete the operation at the same time. An abdominal laparotomy is often refused as the hospital patient,

especially, expects only a cureting for incomplete abortion and will not consent to operation unless or until the condition becomes very severe and the indications demand it urgently.

In doubtful cases error may be avoided and days and weeks of observation may be spared and a sure, definite diagnosis of the condition of the tubes and of the uterus may be obtained by the simple procedure of a posterior or anterior colpoceliotomy, preferably the latter. The uterus is first examined with the sound, it may be cureted; the amount and character of the scrapings may be noted; examination of the adnexa may be made under the most favorable opportunity by delicate bimanual touch, and then the peritoneum is exposed or the peritoneal cavity is entered, preferably by the anterior vaginal route, and

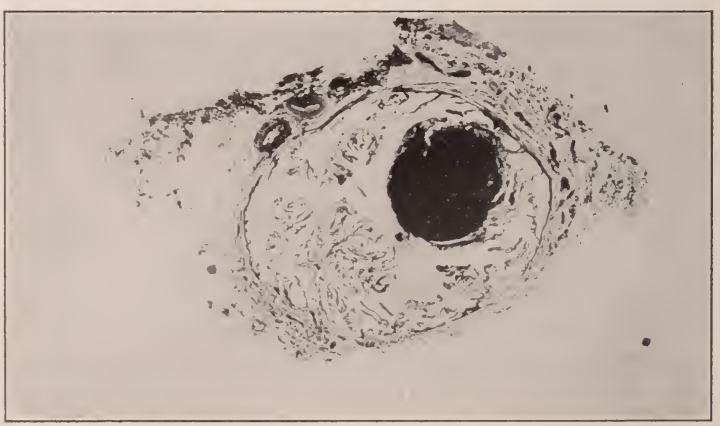

Fig. 2.—Shows the almost extreme outer end of the ovum in relation to two tubal tufts.

in this way the uterus, tubes and ovaries may be brought into view.

In multiparæ it takes at most three to five minutes to reach and enter the peritoneal cavity per vaginam, and in a large number of instances, if one is doing the operation simply for diagnosis and wishes to complete it abdominally, the procedure takes even less time, for it is not always necessary to open the peritoneum if ectopic gestation be present. In the vast majority of instances, I believe, save in a few extremely early cases, as soon as the bladder is separated and the vesicouterine fold of the peritoneum is exposed one gets the dark blue shimmer of blood, the same discoloration that one finds in an abdominal operation

when there is a large amount of fresh or collected blood in the peritoneal cavity.

There are two methods of incision for purposes of diagnosis; one is the transverse, with a blunt dissection of the bladder from the anterior wall of the cervix, after which a narrow retractor is introduced underneath the bladder and the vesicouterine fold of peritoneum comes into view. This method is quite sufficient in women who have had one or more children for in such cases the uterus is fairly large and the cervix wide, the mucosa is thick and quite an extensive area of the vesicouterine fold of peritoneum can be brought into view. In women who have had no children, the cervix, with few exceptions, is narrow, the vaginal mucosa is thin, the separation of the bladder from the anterior wall of the

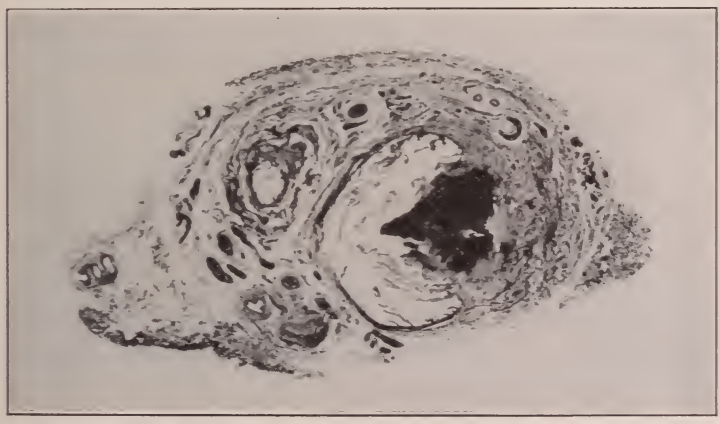

FIG. 3 —Represents the half nearer the uterine end = *two lumena* separated by a complete muscular septum.

cervix and uterus is not so easy, and the retractor introduced underneath the bladder exposes the vesicouterine fold of peritoneum less distinctly and to a lesser extent than in the multipara. In these cases, and of course also in some of the multiparous cases, a longitudinal incision is added to the transverse; the bladder separated from the anterior wall of the vagina as well as from the anterior wall of the cervix and uterus, and in this fashion in practically every case the vesicouterine fold of peritoneum is readily exposed.

The value of these anterior incisions lies in the fact that we are enabled, when desired, to open the peritoneum, to enter the

peritoneal cavity, to make a digital intraperitoneal examination, to bring the uterus and adnexa into the vagina and to perform the operation at the same time if all conditions are favorable. By favorable conditions we mean the absence of rapid fresh bleeding. When only dark thick clotted blood or clots are present, there is little difficulty in bringing the uterus into the vagina and exposing the tube by digital touch. The size of the tube is ascertained, and adhesions of the tube to the hematocele or to surrounding structures are readily loosened, and in this manner the tube is readily brought into view. If the size of the tube is great, if the tube is quite long, if the meso-

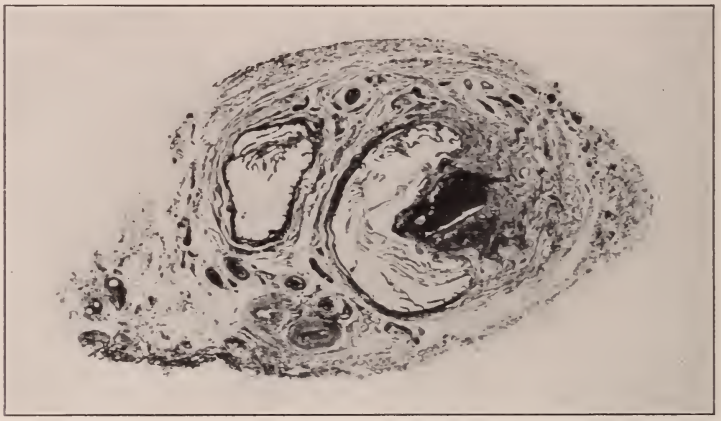

FIG. 4.—Shows the smaller lumen increasing in diameter while the one containing the ovum is becoming smaller.

salpinx is very friable, if the lig. infundibulo-pelvicum is short, attempts at vaginal removal must not be carried further. At any rate the whole procedure up to the point of determining whether the vaginal operation is feasible, takes at the most five to eight minutes. As stated before, if the anterior or vesico-uterine culdesac is simply exposed or if a slight opening is made in it for diagnostic purposes, the whole procedure takes less than from three to five minutes.

In twenty cases of ectopic gestation since the first of last October, I made use of this procedure seven times, using the anterior route six times and the posterior route once. The operation was completed vaginally four times.

Five times I have made the anterior incision and found no ectopic gestation, the conditions then being tuboovarian, the

ovarian element probably producing the alteration in menstruation, or incomplete abortion.

The first case had been operated upon by me seven months previously for a typical ectopic gestation, the right adnexa having been removed. The left side showed a chronic salpingitis and was just the kind of a tube that would lend itself readiiy as a nest for an ectopic gestation. The patient and her husband were warned that conception should be avoided, for two years but seven months after the first operation the patient missed a menstrual period and began to stain and have attacks of cramp-like pain in the left side. A diagnosis of ectopic gestation was made and an anterior vaginal celiotomy was performed. As soon

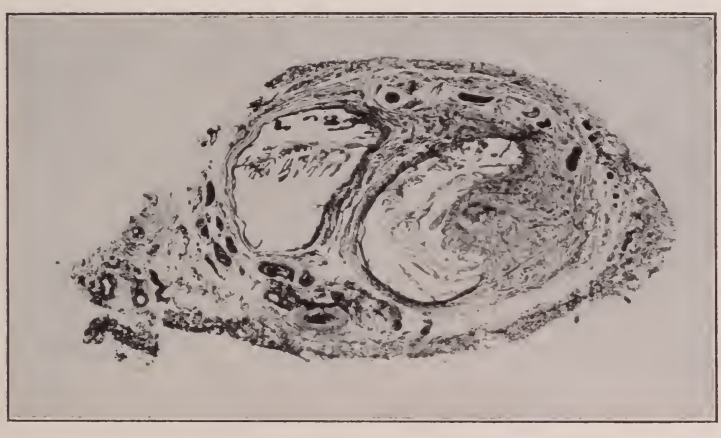

FIG. 5.—The ovum is now represented by a clump of decidual and trophoblast cells embedded in the hypertrophied ridge of the musculature.

as the vesicouterine fold of peritoneum was reached, a distinct bluish discoloration was noted, showing that free blood or clots were present in the peritoneal cavity. The peritoneal fold was incised, the uterus drawn into the vagina, and an ectopic gestation was found in the left tube which was readily delivered into the vagina and removed without difficulty. The patient made a smooth convalescence. Two cases had both been diagnosed, before coming under my observation, as incomplete abortions. Owing to a retroflexed uterus held in that position by a gravid adherent tube in one case and to the fact that only an indefinite mass could be made out in the other case, and that while ectopic gestation was suspected, a differential diagnosis could not positively be made, a vaginal celiotomy was done in both these cases.

The fourth case had a menstrual period fifteen weeks after her last labor; she then spotted occasionally until three weeks before operation when she had a normal period lasting seven days. She went clean for two days and then began to spot again; had abdominal cramps eight days ago lasting a day; more cramps four days ago and again two days ago. There was considerable distention of the abdomen. This tube at the location of the ovum was of a diameter scarcely larger than that of a large bean.

FIG. 6.—The two lumena now begin to communicate. The septum is channelled across at one wall.

Another case gave a rather typical history but her physician absolutely refused to countenance the possibility of an ectopic gestation, and, as stated elsewhere in this paper, I made a vaginal incision to prove to him that the diagnosis was correct. In all these cases as soon as the vesicouterine fold was reached by the T-shaped incision a deep bluish discoloration was observed the same as one sees before opening the abdominal peritoneum, with free blood in the peritoneal cavity.

The sixth case was begun vaginally, tube was delivered and could easily have been removed but a sponge holder was accidentally opened and a small sponge was left in the culdesac. I was unable to reach it and therefore closed the vaginal incision and removed the ectopic gestation as well as the sponge through the abdominal route.

In one case the hematocele was so firm and hard, situated in the culdesac of Douglas, that this fact plus the temperature made her physician diagnose posterior parametritis. An incision into the

large mass made with sharp-pointed scissors showed that we were dealing with an hematocele. I have never advised the removal of an ectopic gestation through the posterior vaginal incision, especially with a large hematocele. This case was completed abdominally.

Let us turn our attention for a few moments to the question of ectopic gestation and its etiology. For the production of an ectopic gestation it is necessary that some obstacle either on the part of the ovum or in the path through which it travels prevents its complete passage through the entire tube, and results in its

FIG. 7.—Shows a section of the tube just outside the ovular attachment and nearer the uterus with only one lumen.

location at some intermediate area where its subsequent development realizes the condition known as ectopic gestation. In the case which I report to-day the obstacle was a congenital spur associated with a blind accessory lumen.

By some it is claimed that the ovum, through external migration or some other delay after impregnation, becomes too large to pass readily through the tube.

This explanation might possibly hold good in a certain number of cases, but it does not ring true, nor does it seem probable. It does seem reasonable, however, that because of some congenital or acquired abnormality within the tubal lumen, especially at its more narrow confines, an obstacle to the further passage of the ovum is presented, and that this obstacle, whether it be a congenital stricture or a twisting of the tube, or a narrowing of the canal due to edema for inflammation, or to union of the tips of

the tubal mucosa, or to interference with the activity of the ciliated epithelium, is sufficient to produce what is known as ectopic or tubal gestation. In a large proportion of cases of tubal gestation the other tube is found to be affected or involved by inflammatory changes, and so frequent is this finding that it seems as if we must accept inflammatory changes as the most frequent cause of obstacles to the untrammeled progress of the ovum. Therefore, when a pregnancy does occur in a tube, it occurs there before the outer end is inflamed and the lumen narrowed; or else pregnancy occurs at a later period in a tube whose outer and inner areas were involved, but the outer end, having healed and become normal, takes up the ovum while the inner area, still retaining a narrowed lumen, furnishes the obstacle to further passage.

In this way we may understand the occurrence of an ectopic gestation very shortly after marriage, or long after a previous pregnancy. I have always viewed this explanation of an ectopic gestation as furnishing the keynote in the way of understanding those cases of primary and secondary sterility which, in spite of the existence of active spermatozoa, and in spite of every medical and surgical treatment of the cervical or uterine causes of sterility, have still remained sterile. In such cases the tubes are closed at the outer end or else not enough of the outer end is normal to draw the ovum into the tubal lumen even to the degree necessary to the production of ectopic gestation. If one of the tubes heals completely then a uterine pregnancy takes place.

Every case carried in mind by the physicians or recorded in the literature where a patient, not purposely sterile for years after the removal of the diagnosed cervical and uterine causes of sterility, subsequently becomes pregnant either in the tube or in the uterus, is possibly a proof of the existence of tubal involvement as the cause of that preceding period of sterility.

Earliest Recorded Tubal Ovum.—A patient was admitted to my service in the Beth Israel Hospital who had been married only ten weeks. She went only a very few days over her period and then began to bleed and spot for some days, accompanied by cramp-like pains of great severity in the right side. The patient was recently married and the only possibility other than ectopic gestation was a beginning tubal inflammation. The patient was very obese and the vagina rather small. It was impossible at first to feel anything whatsoever abnormal. Careful examination, however, excluded any recent infection;

there was nothing in the urethra, nothing in the ducts, nothing in the secretion from the uterus that could call attention to the existence of a Neisserian infection. Had the patient been married many months, even years, with the same train of symptoms, the fact that no external evidences of an infection could be found would not have weighed so heavily in favor of an ectopic gestation, for the reason that the evidences of such an infection might have disappeared long ago, and a possible recrudescence of the annoyance or growth, or the development of the fluid in a tubo-ovarian tumor might be responsible for the pain. So certain was I of the diagnosis that I determined to perform an abdominal operation and found only later that I was really dealing with a tubal gestation, probably one of the smallest tubes and one of the earliest cases that have yet been reported in the literature. The bleeding had lasted three days, associated with severe cramp-like pains chiefly on the right side of the abdomen, when she applied to the hospital.

The curetings had grossly failed to show masses that would suggest an early incomplete abortion before I proceeded with the laparotomy. No blood, free or clotted, was present in the abdomen. The right adnexa were enlarged—the tube looked somewhat purple, the ovary was enlarged about three times and contained a hemorrhagic mass about the size of a walnut. A few drops of blood could be expressed from the ampulla of the tube. This part of the tube was distended but no nodule could be felt. Indeed there was so little change in the tube and comparatively so much more hemorrhage into the ovary that the latter seemed the more likely seat of the trouble and the suggestion of ovarian pregnancy was presented. *The isthmical portion of the tube, the portion which later proved so interesting, was so unchanged that a resection of the tube and ovary was done external to it.* In view of the suspected ovarian pregnancy it was deemed essential for the complete study to resect also, the remaining portion of the tube which was done. It became clear at the operation that the diagnosis of ectopic gestation was based partly upon the palpation of the enlarged ovary and its hemorrhagic corpus luteum and that the tube was absolutely not palpable.

The subsequent examination of the specimen showed likewise how impossible it would have been to palpate the ectopic ovum.

The following description is to be credited to Dr. Eli Moschovitz and Dr. I. C. Rubino, respectively, pathologist and adjunct gynecologist to the B. I. Hospital.

Macroscopically.—The isthmical end of the tube is thinner than a lead pencil and presents nothing abnormal. On palpation of the tube there is a sensation of a rather firm nodule of the size of a small pea at about the center, over which the tube wall seems to roll. Section was made through its center. This showed a firmly organized coagulum on one side of which was a semilunar cleft which was assumed to be tubal lumen. The coagulum was attached firmly to the wall on the side opposite the mesosalpinx. Each side of the coagulum, including small portions of the tube, was blocked and cut serially. Unfortunately, a small number of sections were thus lost in the median part of the specimen, but as further study showed, these were unimportant. The sections were uniformly stained by the hematoxylin-eosin method.

Situation.—The ovum is circular in outline and is attached to the superior wall of the Fallopian tube opposite the attachment of the mesosalpinx. It occupies about one-half of the tube lumen and is attached to about one-third of the circumference of the tube. The tube is apparently not enlarged and would correspond in size to an average tube at this point.

The embryo as such cannot be distinguished. It is represented in this specimen by trophoderm. This consists of two chief parts, a superior and inferior, which extend along the entire ovular attachment but occupy only about one-fifth of the circumference of the coagulum.

Decidua as such is not seen.

Size.—By actual measurement the tube is 5.5×6 millimetres. The entire ovum measures at its greatest diameter $3.75 \times 3.5 \times 2$ millimetres. The uterine half of the tube containing the ovum measures 5.5 millimetres in its vertical axis by 5 millimetres in its transverse axis.

The average normal tube corresponding to the point of nidation of the ovum in my own specimen, according to Poirier, Charpey, and Ballantyne, measures 5–6 millimetres.

There is no leucocytic infiltration in the stroma or in the muscular layers or the serosa.

Followed toward the uterine end a small structure appears in the mesosalpinx, lined by what seems to be tubal epithelium (Fig. 4). It is completely separated by a muscular septum from the large tube enclosing the ovum and resembles, on account of its primitive epithelial lining, the isthmical portion of the tube

at a point very close to the uterine insertion. These two lumina are separated by a muscular layer 1.1 millimetres.

Summary.—The specimen shows an exceedingly small ovum not sufficiently large to fill the normally narrow lumen of the isthmical portion of the tube. The tube at this point shows some anomalous features.

1. A muscular spur formation is present, causing a diverticulum to form with its blind end buried in the mesosalpinx, and on the mesial aspect of the point of nidation.

The ovum rests upon and is imbedded in a muscular eminence to the distal side of the muscular spur and is nowhere in connection with the diverticulum on the proximal side. It projects into the lumen of the tube but is covered by tubal epithelium. This covering is complete in the half nearest the uterus and only partially in the half nearest the fimbria where it may be assumed to suggest a beginning intracapsular rupture.

The embryo as such is not present. It is represented by several large masses and streaks of trophoderm which lie near the trophoblast. There is as yet no true chorion formation.

Leucocytes are present only underneath the base of the ovum between the loose muscle fibers, and nowhere else in the serosa, musculature or mucosa of the tube. In view of the total absence of evidence of salpingitis this leucocytic infiltration can be assumed to indicate a secondary local reaction and not a primary inflammation.

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PREGNANCY, SIMULATING EXTRAUTERINE FETATION OR PUS-TUBE.

BY

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THIS case is reported to show how easily mistakes are made in diagnosis, even where the greatest care is taken and where there has been large experience.

Miss H. K., age twenty-three, had always been well; never had any serious illness or any pelvic trouble. Her menstruation was normal until the end of December, 1911. At the end of January she began to menstruate, but stopped in a day. At the end of February she had pain, a discharge, and painful urination. This was followed by pelvic inflammation, with severe pain on the right side, and temperature of 101.5° F. She was confined in bed for ten days or more at this time.

By the middle of March she recovered sufficiently to be up and about, but still complained of pain on the right side. The discharge had lessened. She did not menstruate, however, and was finally brought to me.

I saw her first on April the sixth and got the above history. On thorough investigation I found a vaginal discharge, which on microscopic investigation proved not to be a gonococcus infection, as I had suspected. She had no elevation of temperature. On vaginal examination the cervix was found a little larger than the normal size, but hard like that of a virgin. The uterus lay forward and toward the right, but apparently united to a mass on the right side, which could not be mapped out well, on account of the great tenderness and the fear that I might rupture an ectopic pregnancy, which I suspected.

The breasts were somewhat enlarged and darkened around the areolæ. I made up my mind that the girl was suffering from an extrauterine pregnancy, although as a result of the fever and the inflammation there might be a quiescent pus-tube or a rupture of the extrauterine fetation might have caused the inflammation and adhesions. On account of the comparative hardness of the cervix, it could not be a normal pregnancy. I therefore made a tentative diagnosis of tubal pregnancy, a partial rupture had

caused inflammation and adhesions. I believed that under these circumstances an operation was indicated.

She went to Harper Hospital the next day, and I operated on April eighth. While operating I called the attention of a number of physicians (and assistants) who were present, to the difficulty we formerly had in diagnosticating this condition and to the dread which even the general practitioner had when the peritoneum was opened. I also related the history of the case reported by Dr. Joseph Price, which was diagnosed as a tubal pregnancy. Dr. Price told the husband, a physician, that he would cut down through the tissues to the peritoneum, and that if the diagnosis was correct, he could see the coagulated blood through the thin serous membrane; that it was quite black beneath.

When I cut down to the peritoneum I found it very dark, but not as black as we usually see in acute cases of freshly ruptured tubes.

I attributed this lack of blackness to absorption, as the rupture must have occurred about four or five weeks before. What was my astonishment on carefully opening the peritoneum to find a pregnant uterus, adherent to the right side of the pelvis, high up, as were also the right ovary and normal tube. The appendix was above and not connected with the mass.

The pregnancy must have been nine or ten weeks along. The adhesions were readily broken up and the raw surfaces dusted with aristol. The left tube and ovary were perfectly normal. The abdominal incision was closed in layers in the usual manner. The patient made an uneventful recovery.

This case shows how difficult it is to make a correct diagnosis in abdominal troubles and how easily we can err.

DISCUSSION ON THE PAPERS OF DRS. BANDLER AND CARSTENS.

Dr. Sylvester J. Goodman, Columbus.—I wish to report a case which is almost like the one reported by Dr. Carstens. The patient is thirty-two years old, very frail in appearance, has two children, the younger being six years of age. Both labors were severe and were forceps deliveries. The patient, who was referred to me by the attending physician, complained of severe pain in the right tubal region. She was almost regular until February 4, when she missed a period, and was perfectly dry until April, when she menstruated again. On the twenty-seventh of April she ceased to menstruate, complained of pain in the right side, gas in the stomach, nausea, temperature and pulse normal. There is possibly a gonorrheal history in the

husband. Vaginal examination shows a tender mass in tubal region. The uterus appears to be three months pregnant. She is tender in the region of the right tube. The perineum and cervix are lacerated. There is a mass to the right of the uterus about the size of an orange and apparently disconnected except at one point. The diagnosis lay between appendicitis and ectopic pregnancy. I made a median incision, went down to the peritoneum, and got a blue color, and on opening the peritoneum found something like this (indicating). Diagrammatically we will suppose that it came off here (indicating) and right up at this point at the head of the colon was an inflamed and thickened appendix. You can see the shape of the uterus. Her pain was due to a badly involved appendix. The uterus is returning to normal shape and the woman is doing nicely.

Dr. Gordon K. Dickinson, Jersey City.—There are two points in connecton with diagnosis and treatment that I desire to mention. I am glad to see that Dr. Bandler made an error of omission and Dr. Carstens one of commission. I also made an error. I had a case in the hospital which I diagnosed to be "Nothing doing." A friend in New York did the operation and got the credit. I do not know of any one symptom which is pathognomonic. Reference has been made to the blue peritoneum and the presence of blood. In doing a colpotomy for cystocele, procidentia, etc., on a case which presented no symptoms of tubal distention, I brought down the uterus, as I always do, and found there was a small enlargement, ectopic. There was no blood in the peritoneal cavity, and no evidence of its being ectopic pregnancy. But on removal and incising it, I found the smallest fetus I have ever run across. I referred it to Dr. Walsh, of the New York Lying-in Hospital. There is nothing harder to diagnose than these cases of pregnancy and appendicitis. These two diseases bother me very much, and pregnancy in a tube is harder still. The treatment should preferably be vaginal section. I do not think any man has any more right to explore a woman's abdomen, make a scar and disfigure her than he has to do any other unnecessary operation. If you can operate by the vagina, and you generally can, you should always do so. The route is easy. By the T-shaped incision one may open up the peritoneal cavity, bring down the fundus, and there you have the tube unless there are adhesions. You can treat it, remove the clot, thoroughly inspect the other tube, and leave the patient in a condition so she can leave her bed more promptly. She will have less shock and quite a prompt recovery.

Dr. K. Isadore Sanes, Pittsburg.—We would like to ask the doctor why he prefers the exploratory anterior incision. Within the last six months, we have removed two tubal pregnancies through the posterior culdesac. We choose the posterior incision because with it we do not need to disturb the bladder, and besides, if we find any necessity for drainage, we can drain

through the same incisions. Again if we have a case of ruptured tubal pregnancy that has been bleeding for some time, we cannot tell whether we have to deal with an infection or not. By operating through the posterior culdesac, we can easily drain when we are in doubt.

Dr. Channing W. Barrett, Chicago.—With reference to the question of colpotomy in the diagnosis of extrauterine pregnancy, I recognize the difficulty we may have in making a diagnosis where there is hematoma present or any considerable enlargement of the tube, but we should be very cautious in making a colpotomy for diagnosis. There are cases on record where women have died suddenly from an opening through the vagina for diagnosis. If that method becomes necessary for diagnosis, the patient should always be in a hospital and ready for an abdominal operation if it is required after that operation. We should be very careful in teaching men, as a rule, about the diagnosis of extrauterine pregnancy, in order to tell them what they shall do with the patient. Once in a while we may fall back on exploration to know whether we are dealing with extrauterine pregnancy or not.

As regards operating for extrauterine pregnancy and finding normal pregnancy, I will briefly relate a case that I saw for the first time out of the city, and made a diagnosis of extrauterine pregnancy, continuing about three and one-half or four months. The uterus seemed to be felt running up from the vagina a distance of 3 1/2 inches. In other words, one could feel a normal enlargement of the uterus. Having made this diagnosis, I operated and found that we had a normal pregnancy and a very long cervix that could be felt bimanually through the abdomen, that is, one hand posterior, and the other hand anterior to the uterus. The condition which made the case unusual was the presence of twins in the uterus. This was the third pair of twins that woman had had.

Dr. Bandler (closing).—I do not advocate the vaginal route as the usual route for removing ectopic gestation by any means. I use it principally for diagnosis. If I were certain of the diagnosis, I would open the abdomen. It is only when I am not certain, and I do not wish to tell the doctor or patient that I am pretty sure, that I find this method of value. If I am pretty sure, I say so and I open the abdomen. If I am a little less than sure, then I prefer to go in through the vagina and find out. The reason I adopt the anterior instead of the posterior vaginal incision is that there is apt to be a lot of bleeding in the latter route, whether from the edge of the wound or from the peritoneal cavity. In the next place, if you operate and wish to take out the tube that contains an ectopic pregnancy, you cannot do it as well through a posterior incision as you can through an anterior, because you cannot get the organs down into view as well as through an anterior incision. Where the uterus is anteflexed or anteverted, you can then especially get

at it more easily by the anterior incision. You can see the uterus. If there is an ectopic gestation, with a mass in the posterior culdesac, then I make a posterior incision for diagnosis but do not attempt any further operation through the vagina posteriorly. Frankly speaking, I cannot do it nearly as well by the posterior route as the other way, and I don't think any one else can.

I want to make an explanation about this case of early ectopic gestation. The patient was married only ten weeks. She came into the hospital with a history that for three days she had had terrific cramps on one side. The history was typical. We found a small mass on one side. It occurred shortly after marriage without any evidence of Neisserian infection of the ducts or urethritis, or cervical discharge. In the absence of these things the history was typical. I opened the abdomen, and apparently instead of finding a tubal gestation, I found a corpus luteum about three times the normal size. I removed the ovary, thinking it might possibly be an ovarian gestation, having had one such case a few months before. I resected a portion of the tube. In the resected apparently normal tube was found this earliest recorded ovum. Had that operation been done vaginally by means of a posterior incision it would have told us nothing. An anterior incision might have been of use. It is marvelous how such an early case gave typical colicky symptoms due to spasm of the musculature of the tube.

Dr. Carstens (closing)—. There is little or nothing to add to what I have already stated in my paper. We all make mistakes. A few years ago I was called to see a case of what I thought was typical appendicitis. This woman I knew. I operated on her two years ago, removed a cirrhotic left ovary and tube. She had elevation of temperature, which gradually increased for two days. It rose to 102, and her pulse was 84. She had a severe pain right at McBurney's point, and it was certainly a typical case of appendicitis I thought. I operated for appendicitis, and when I got to the peritoneum it was black, and I said we must have made a mistake. When I opened the peritoneal cavity blood gushed out. There was nothing the matter with the appendix, but the woman had a tubal pregnancy. I enlarged the incision and got out the right tube. In appendicitis we have elevation of temperature with a slow pulse, 80 to 90, until the case has further advanced, then we get a high pulse. With extrauterine pregnancy, we have a normal temperature instead of an elevated temperature, with a rapidly increasing pulse to 110 or 130. I will simply say on general principles that I have operated on two or three cases of extrauterine pregnancy through the vagina, but all things considered, I do not believe we can do that kind of work. I have seen some cases operated on through the abdomen where I know the extrauterine pregnancy could not be gotten out through the vagina. The least attack may endanger the patient's life. With a clean cut through the abdomen you can remove the pregnancy, you can see what

you are doing and you are not likely to do the patient half as much injury in groping around in the dark through the posterior or anterior culdesac, where you do not know what you do. So far as leaving scars is concerned, you can by sewing them up with large bayonet needles. But by bringing the skin together, with a little plaster, you will not have any ugly-looking scars.

NOTES ON INJURIES OF THE PELVIC FLOOR RESULTING FROM CHILD BIRTH.

BY

FREDERICK BLUME, M. D.,

Pittsburg, Pa.

PATIENTS with injuries of the pelvic floor due to labor, who have come under my observation during the past few years, have convinced me that very little progress during the past thirty years has been made in the management of these lesions immediately after labor in the hands of the general practitioner. As in many other branches of medicine, much has been accomplished in the development of the art and science of obstetrics during this period. Since the introduction of bichloride of mercury into obstetrics thirty years ago, many debatable points have been settled, new operative procedures have been devised, old ones improved, every effort has been made to protect child-bearing women, to render the trying days of the lying-in period as comfortable and safe as possible, and to prevent invalidism following childbirth. But the favorable results of the teachings of modern obstetrics, so evident in our maternity hospitals and in the obstetrical departments of general hospitals, are not so apparent in the obstetrical work of the general practtiioner.

Various causes seem to contribute to render the practice of obstetrics more or less undesirable to the successful physician. It is well known that the average practitioner is very poorly paid for his obstetrical services, and this, in my opinion, is one of the causes which induce him to spend as little time as possible with the parturient woman and to give nature a chance to do, what he thinks, it can do, or ought to do. The view that child-bearing is a physiologic process, that therefore the vast majority of deliveries are instances of normal labor and rarely need the assistance of an accoucheur, is still held by many physicians. Believing that nature is able to restore these organs to normal or almost normal conditions under favorable circumstances, they do not consider lacerations of the pelvic floor an important or unfortunate injury and do not deem it necessary to repair them immediately after labor. Thus it happens, even at the present time, to be a rather common occurrence to hear a

patient say that her physician assured her she had been fortunate to escape a laceration, or that she had but a very superficial tear which does not amount to much, while the examination shows the skin perineum to be almost intact but a tear in one or both vaginal sulci. Two years ago I operated upon a patient with a complete laceration, extending into the rectum, after she had been kept in bed by her physician three weeks with her legs tied together in order "to give nature a chance," as he expressed it. Experience of this kind, and I could quote a number of similar instances, warrants the assertion that this very important subject needs and should be given our earnest consideration.

Within the past few years I have noted that a change has taken place in the remarks of this class of patients. Some of them, when giving the history of their ailments, are quite severe in the criticism of their physicians because they "were torn so badly," that they had to be sewed, six or seven sutures being required. My explanation to such patients that perineal lacerations are unavoidable and that the repair in her case proved her physician to be a careful and conscientious obstetrician, was almost always met with the assurance that some of her friends, recently delivered by other medical attendants, needed only one or two sutures. This new method of estimating the efficiency of the obstetrician according to the number of sutures which he uses in the repair of the perineum is at first sight rather amusing. On closer consideration, however, we fiud that something has been gained, something of importance to the child-bearing woman as well as to the obstetrician. The knowledge that some sutures are required to repair injuries of the pelvic floor, that the number of sutures varies with different patients and with different physicians, has set women to thinking. Discussing this subject with friends they find how little they know about those organs and the functions of those organs which are of such importance to them the greater part of their lives. The desire to obtain further information is aroused and, with increased knowledge, they very soon will modify the opinion about their medical attendant and be less offensive, less unjust in their criticism.

The various methods recommended for the protection of the perineum during the passage of the head through the vulvar orifice are well known and do not need further discussion here. While some authors are enthusiastic in their advocacy, others

ascribe their success to the expansibility and elasticity of the soft structures. This difference of opinion as to the value of such methods is well founded. It certainly is assuming a great deal to expect that the vaginal outlet, which in the married nullipara barely admits the introduction of two fingers, should at the delivery of the child dilate to such an extent as to permit the passage of the head without some laceration. The assertion, therefore, is justifiable, that lacerations of the pelvic floor are unavoidable under certain circumstances in a large percentage of the cases in spite of all prophylactic measures. While this is well known by the medical profession the public looks at it in a different way. Women, even those of the higher walks of life, do not believe that a laceration of these parts is unavoidable in a large percentage of the cases. They blame the obstetrician and insist that the injury is due to his ignorance and carelessness. On the other hand, the physicians are well aware of this prejudice and therefore hesitate to admit the laceration, or try to minimize it by telling the patient that only one or two sutures are required. This, I think, is the cause why we gynecologists, even at the present time, see so many women with perineal and vaginal tears, which should have been repaired immediately after labor and why this class of patients still furnishes a large percentage of our operative cases. The diagnosis of this condition being so easy and the serious consequences so well understood, there is no reason why the obstetrician should hesitate to admit the tear other than the fear of being blamed for something unavoidable under certain circumstances, which the woman however, considers an accident, and avoidable by ordinary care.

It is worthy of note that in this era of preventive medicine the child-bearing woman seems to have been overlooked by the general practitioner. The repair of the injuries of childbirth immediately or shortly after labor, as done in the daily routine work in maternity hospitals, is the only efficient method of preventing serious disability so often following labor. Nature's method of repairing lacerations, even superficial ones involving the fourchet, is accomplished by granulation and therefore not successful. Primary union can be obtained only by the operation, the value of which as a prophylactic measure is not and cannot be disputed. This view seems to be almost universally accepted and, on careful observation, it must be admitted that some progress has been made in the management of these lesions

by the general practitioner, but this progress has been very slow. Thus the question presents itself,—how can we improve this unsatisfactory condition?

In a paper which I read before the Allegheny County Medical Society in 1904, discussing the early symptoms of cancer of the uterus, with remarks on our shortcomings in the management of this disease, I recommended the education of the laity upon sexual matters as the only means of reducing the mortality of this dreaded disease. I said among other things. "It is a lamentable fact and characteristic of our defective methods of education that even intelligent, educated women have no knowledge to speak of about those organs which are of such vital importance to them during the greater part of their lives. That women need education along this line cannot be disputed and no valid reason can be given why they should not receive it."

What I said at that time with reference to uterine cancer applies with the same force to the lesions resulting from childbirth. In connection with other things women must be taught that these injuries are the rule and not the exception, that only a small percentage of the patients escape such injuries and that such escape is possible only under the most favorable conditions. They must be instructed that neglect of these injuries results in suffering and invalidism, that their immediate repair is the only measure which prevents serious consequences, and that such repair must therefore be regarded as a part of the delivery, its final step.

Such information will be of great benefit to child-bearing women, who, in order to protect themselves, will demand the repair of these lesions as a preventive measure. At the same time it will improve the position of the obstetrician, who, no longer fearing unfair criticism, will resort to the only proper method of treatment—the operation immediately after delivery in ordinary cases. If the tear extends into the bowel or through the sphincter the operation may be done on the day following labor, with better light and assistance.

There is a large number of women who either from habit or from economy, choose to be delivered by midwives. I refer especially to those women who come from southern Europe, whose deliveries are tedious and complicated in a rather large percentage of the cases, due to abnormalities of their pelves which, compared with the pelves of women of the Anglo-Saxon race, are smaller and often not so well formed. It is this class

of patients which offers an excellent opportunity to study the serious consequences resulting from neglected injuries of the pelvic floor. Relief of this unfortunate condition cannot be reasonably expected until these poor child-bearing women are given the advantages of modern obstetrics. How to accomplish this is one of the most important problems confronting the profession at the present time, and one which in my opinion, can be solved only by legislation.

JENKIN'S BUILDING.

DISCUSSIONS ON THE PAPERS OF DRS. STILLWAGEN* AND BLUME.

DR. EMERY MARVEL, Atlantic City.—I doubt if there is any subject on our program that is more important than the one now under consideration. There is probably no other one condition that causes so much trouble to women as do the lacerations incident to childbirth. If these lacerations are repaired early, much suffering will be prevented. The remedy for their relief is indicated, simple and can be easily applied. One reason why the remedy is not applied may be largely due to ignorance on the part of some members of the profession who take care of these women and fail to recognize the trouble and see that the correction is made; or it is due to ignorance on the part of the women themselves in not knowing their trouble. I wish to endorse very heartily the recommendations for better education of the laity, who need it so much in order that these women may be relieved of their sufferings and inconvenience by soliciting timely measures for treatment.

DR. J. HENRY CARSTENS, Detroit.—The preceding speaker has stated facts with which I agree, but there are certain things back of them, and one is the lack of education in obstetrics. It is not that the teacher does not teach obstetrics correctly, but he has not the facilities to do so as they have in Europe. The greatest trouble in a medical college is to get obstetrical material enough for the student. Thirty years ago students left medical colleges without ever having seen a case of obstetrics. Later they required that students should at least see two cases of obstetrics, and now they require that they attend four or five cases. If you teach obstetrics as it ought to be taught, a great many lacerations of the cervix and perineum might be prevented. To deliver a woman on the bed, the delivery can be brought about better if you put her on the side with her limbs drawn up. They put on forceps, pull, and then take the forceps off. I have shown students how to put these women on the side, how to apply forceps to bring the head down, bring it down on the perineum, and tell them if they will just take time, the perineum will gradually relax. You must massage it, work on it gradually and the

*Paper by Dr. Stillwagen will appear in a later issue.

head will be delivered without producing any laceration. If you have an extraordinary case where the perineum is rigid or edematous and is bound to tear, you can perform episiotomy, cut it on one or both sides, and prevent a tear in some cases. One very important thing is to teach students that they must take more time in the very last few minutes of labor; that if they would wait five minutes more, these muscles would relax. A lacerated perineum ought to be sewed up right away. In good institutions I do not think there are lacerations of the perineum in more than 10 or 15 per cent. of the cases, but there are a certain number of perinei that will tear. In blondes the perineum will tear more easily than in brunettes. There is no question about that at all.

Dr. Wm. H. Humiston, Cleveland.—This paper is timely and full of interest, and I agree with the author that with the care a competent man can give these cases he will have more or less tears. The only hope for the woman is that the man attending her is a competent obstetrician and knows how to put in his sutures to obtain a good result. If tear is not repaired at once, her chance of getting a proper pelvic floor and muscular perineum by the ordinary operating surgeon is almost nil. These secondary operations are easily done if you will expose the muscles, unite them together, and close the incision with continuous catgut. The old method of denuding down to the fascia and uniting its surfaces together does not afford relief. I frequently reoperate on patients who had been operated upon before without relief. These patients have no muscular perineum and pelvic floor, and the operation has been a failure.

Dr. Edward J. Ill, Newark.—I not only agree with what Dr. Blume and others have said, but I would encourage him to continue in this line of work. I should like to go a little further and say that there is a form of injury to the pelvic floor that is not recognizable by any lesion of the mucous membrane or skin, and where there is no apparent laceration of the tissues. In those cases the levator ani cannot be felt. I would advise that the examination be continued the next day or in twenty-four hours, and if still muscular tissue cannot be felt, that then the vagina on both sides be split along the sulcus, and the muscle and fascia brought together and sewed over. I deprecate very much that operation should be done immediately after labor. I think all failures have been due to the fact that the operators have relied on two or three sutures to do the work after labor. Twenty-four hours should always intervene between labor and operation for the repair of any laceration. The patient can be shaved and everything cleaned up, and the necrotic tissue can be cut away with a pair of scissors and the tissues properly brought together. All the swelling incident to labor will have been reduced and the sutures will fit snugly and closely without danger of cutting into the tissue.

Dr. Gordon K. Dickinson, Jersey City.—There are three

points I wish to refer to. In the first place, we forget the baby. The statistics of those who study these cases the most go to show that when a child is slowly born it is liable to petechial hemorrhages into the brain, and is not as bright as it should be. In the second place, rapid delivery is very apt to cause a laceration of the tissues, even though it may only be detrimental to the mother temporarily. I do not believe in immediate operation, as pointed out by Dr. Ill. The sutures when put in hang like ear rings and do not hold the tissues well together. We should wait until we get the blue spot sloughed off. We should wait until there is drainage at the upper portions and then put in sutures in the skin as well as in the fascia and muscles. A third point I would refer to and emphasize is confining women in the cities. In my neighborhood I am sure there is not one woman in a hundred or even one in two hundred that is properly delivered. Usually, the doctor is in a hurry. He is a law unto himself. He may be cleanly. He may have a good knowledge of antiseptics, etc., but yet the woman suffers. We must educate certain members of our profession in regard to obstetrics. I am almost inclined to believe with Dr. Ill that many women, if not the majority of them, would be better off if they were attended by midwives.

Dr. Arthur J. Skeel, Cleveland.—Dr. Ill just took the words out of my mouth with regard to what he said concerning immediate examination. The obstetrician is sometimes severely criticised for not making repairs of damages which a woman suffers at the time of labor. Of course, when a woman has a laceration of the perineum it is generally apparent upon inspection, but very frequently, when muscular separation has occurred beneath the mucous membrane, palpation and inspection immediately following labor do not show it. If we do not find any damage immediately after labor, two weeks later, if we will examine the perineum carefully, we will find that some damage has been done to the pelvic floor which was not apparent at the time. The perineum may have been so greatly stretched by the distention produced by the child's head in its passage, that the immediate examination may not show that she has suffered any definite damage.

Dr. Hugo O. Pantzer, Indianapolis.—Without wishing to argue against the general trend of the Doctor's paper, and speaking simply to the point of relative proficiency in obstetrics, I recall the five months' experience I had at the Lying-in Hospital in Vienna in 1884 and in 1885. The midwives in attendance there would often attend thirty to forty cases of confinement before having any tears, and, indeed, tears were painstakingly looked for in each case. There is a great deal in proficiency in avoiding such accidents.

Dr. Carstens.—Is it not because they give the women time to be delivered?

Dr. Pantzer.—Yes, and secondly, because the patient is finally confined while lying on her side, not on her back.

Dr. Frederick Blume, Pittsburgh (closing the discussion).—It is rather peculiar that in this era of specialism the obstetrical specialist is but rarely called as consultant. The general practitioner, for instance, sends his patients with diseases of the eye, or of the nose and throat to specialists in these branches, whereas if advice or assistance is needed in complicated cases of labor, a friend, another general practitioner, is sent for. I asked an obstetrician, a specialist, what in his opinion is the cause of this condition. His answer was: the "odium of comparison." I add to this: the higher fee of the specialist. There is a great difference between the careful and expensive preparation for deliveries made by the specialist and by that of the general practitioner who is so very poorly paid for this kind of work. To avoid any comparison the specialist is not called.

One of the speakers said the immediate operation is not very successful; the lesions should be repaired ten or twelve days after delivery. In the large European Clinics the immediate repair of these injuries is the daily routine work and certainly very effective. Thus it will be here, if properly done. The introduction of one or two sutures through the skin, including a part of the torn vaginal tissue, must result in failure. The lochial secretions will get into the torn sulci, become decomposed, infecting the wound and preventing primary union. If the injuries are repaired immediately after labor the parts are numb, no anesthetic is needed. In cases of complete tears the operation is better done the day following labor, with better light and assistance, as I stated in my paper.

Some of the speakers expressed the opinion that these lacerations can be prevented in most cases by prolonging the last part of the second stage of labor; placing the patient upon her side, pressing against the head, slowing its exit and delivering it between pains. This method of delivery is well known and justly recommended as a prophylactic measure. But we all remember how this method disappointed us, how the perineum gave way like the proverbial wet blotting paper the very minute when we felt certain that we were going to avoid a laceration. The best we can say of these methods is: they are helpful under favorable circumstances, but the percentage of injuries of the pelvic floor is still large in primiparous women in spite of all prophylactic measures.

It has been said that the general practitioner is not sufficiently trained to successfully attend labor cases. I think we all admit this, but this is the fault of the medical schools and therefore I refrained from criticising the physician on this account. But if assistance is needed in a complicated case an obstetrician should be called, who through years of training is more competent to handle the case than the average practitioner. If in ordinary cases the medical attendant is not capable of successfully

repairing the injuries of the pelvic floor it is his duty to call in somebody who is able.

I presented this brief paper to call your attention to a condition which demands the earnest consideration of the medical profession, that child-bearing women may be benefited by the teachings of modern obstetrics and protected against suffering and invalidism. I thank you for the kind attention given my paper.

FIBROID OF THE STOMACH WITH PERFORATING ULCER. TRANSGASTRIC RESECTION. RECOVERY.

BY

ROLAND E. SKEEL M. D.,

Cleveland, Ohio.

Dr. Roland E. Skeel, of Cleveland, Ohio, presented the report of a case of

FIBROID OF THE STOMACH WITH PERFORATING ULCER. TRANSGASTRIC RESECTION. RECOVERY.

S. E. S., male, æt. forty-eight, an unusually robust teacher, of perfect habits and with no previous history bearing upon the present illness, was taken with an attack of hematemesis and melena on February 8, 1912. His physician diagnosed duodenal ulcer and placed him upon appropriate medical treatment notwithstanding which dark blood continued to make its appearance in the stools. When seen on February 16, 1912, nothing new could be elicited. The age, sex, entire absence of previous symptoms and sudden onset seemed to bear out the original diagnosis which was concurred in. The patient was then in fair general condition and seemed to be improving, with a pulse of 70 and hemoglobin 60 per cent. He was accordingly sent to the hospital with the idea that as the hemorrhage was decidedly on the decline he might entirely recover from its effects under rectal feeding, etc., when gastroenterostomy with infolding of the ulcer might be done.

For two days the condition continued to improve but at the expiration of this time there was sudden but not agonizing abdominal pain with moderate elevation of the pulse rate and a decided change in the facial expression.

Under nitrous oxide anesthesia the enormously fat abdomen was opened and the duodenum exposed with considerable difficulty only to find it in perfect condition and containing considerable quantities of grumous blood.

On palpating the stomach a mass could be detected in the posterior wall at the junction of the body and the antrum.

This mass was round and moved with the stomach and upon exposing it by an incision transversely through the anterior gastric wall, proved to be a fibroma. Running from the apex of the tumor upward was a necrotic area, as shown in Plate I, extending through the mucous and muscular coats and from which arterial bleeding was clearly in evidence. The close adherence of the tumor to the posterior peritoneal covering of the stomach made an attempted enucleation without opening the lesser peritoneal cavity impossible and the posterior stomach wall was consequently resected transversely after drawing it through the anterior incision. An attempt at clamping before resection, failed and the lesser peritoneal cavity was protected by gauze packing after the first incision was made.

Closure of the posterior incision was effected by through-and-through sutures passed, of course, from the mucous side, and as an additional precaution a small cigarette drain was left in the lesser cavity. No leakage took place and the wound healed without difficulty. The patient left the table in good condition, but, as happens so frequently after gas anesthesia, developed profound shock and was in a critical condition for three or four days. Eventual recovery was complete and the patient has practically regained his previous health although subject to occasional attacks of palpitation and cardiac weakness.

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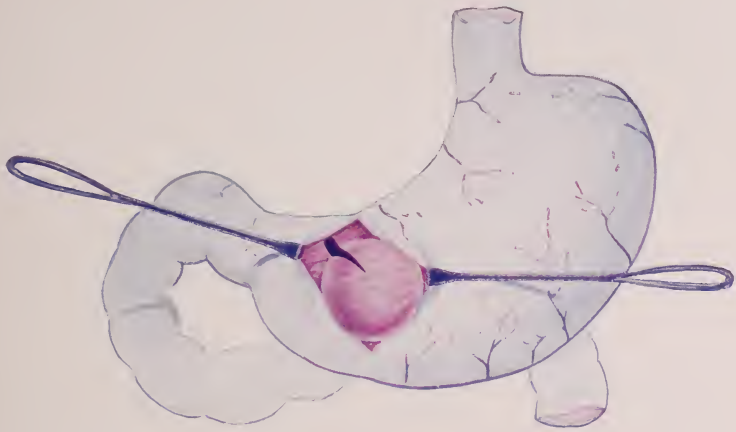

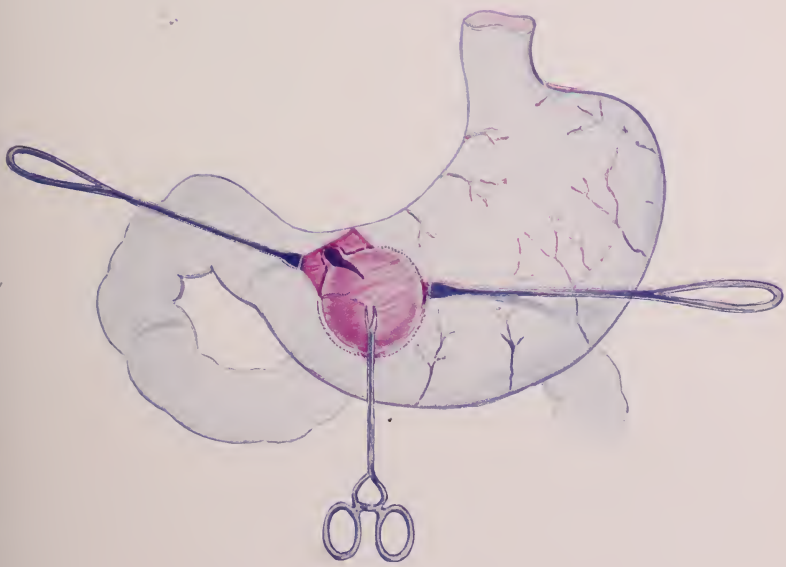

I. Fibroid in Posterior Stomach Wall; Dark Area—Acute Perforating Ulcer.

II. Dotted Area—Line of Excision Through Posterior Stomach Wall.

THE COMPLETE ABSENCE OF MILK IN THE PRIMIPARA.

BY
FRANCIS REDER, M. D.,
St. Louis, Missouri.

THE refusal of the mammary glands to respond to the physiological stimulus at the usual time after labor is so rare an occurrence and contrasts so strangely with the laws of nature that a report of three cases would probably be of some interest to this Association.

The literature on this subject is very meager. I could not help but feel disappointed when I sought to inform myself about this abnormal condition.

A delay in the lactating period, or a partial absence of the normal milk supply, or even a return of the milk after an inhibition of the glandular activity, are conditions that frequently evidence themselves and can usually be accounted for to the satisfaction of both mother and attendant. A complete absence, however, during an uncomplicated puerperium in woman whose health has always been good, precipitates a problem of a rather enigmatic nature.

The causes that may bring about in the healthy woman a primitive agalactia in its extreme degree, can be found in a very youthful motherhood, where normally a deficient development in the secreting cells can be expected. It can be found in the motherhood of advanced age, where normal atrophic conditions of the gland have caused extensive cell destruction. A tendency to obesity may sometimes completely inhibit the functional activity of the gland. Furthermore, a tendency toward the masculine may seriously affect milk secretion and in rare instances be the cause of agalactia.

Physical influences, *i.e.*, emotions of sudden onset, such as fright, shock, etc., are prone to precipitate by their depressing reflex action upon the sympathetic nervous system, deleterious influences that may inhibit cell activity in the organ.

The cause of the agalactia in the three primiparæ, whose cases are appended, must be attributed to psychic influences inasmuch as there is no other discoverable factor to which the condition

could be assigned. It cannot be disputed that the nervous system exerts some influence upon milk secretion. It remained to be demonstrated whether or not such an influence was direct or indirect.

The interesting experiments of Mackenzie have shown that the secretory activity of the mammary gland is not under the direct influence of the nervous system, but that the nervous stimulation exerted is upon the organs which supply galactagogues to the blood. In determining this fact, stimulation of the nerves of a lactating gland with either a weak or a strong faradic current, did not provoke an increased flow of milk, nor did it inhibit the flow of milk. Even the severing of the nerves supplying the gland produced no effect upon the normal secretory activity.

The interesting statement is ventured that no nerves are distributed to the secreting cells. This assertion is based upon the absolutely negative results from the experimentation with pilocarpine and atropine in endeavoring either to promote or to arrest the secretion of milk. This experiment, together with the nerve stimulation and the nerve section demonstration, would give convincing evidence that the nervous system has no direct controlling influences over the secretory activity of the gland.

Although the mammary gland, after having reached maturity, is associated by sympathetic influences communicated through nervous stimuli, with the functions of the pelvic generative organs, it has been shown that the generative organs exert no reflex stimulus upon the secreting function. Thus in their experiments, Goltz and Ewald found that after removal of the lumbar portion of the spinal cord in a bitch, a physiological evolution took place in the mammary glands during pregnancy with a normal secretion of milk after parturition.

A case of the destruction of the spinal cord in a pregnant woman with normal lactation following parturition is reported by Routh. The most conclusive experiment demonstrating the negative phase of nervous impulses on the mamma was made by Ribbert, who transplanted a mammary gland in a guinea-pig from its normal site to the region of the ear. During pregnancy this gland underwent the normal metamorphosis and secreted milk after delivery.

To the physiologist these experiments conveyed sufficient evidence that nervous impulses are not the principal factors in the cell activity of the mammary gland. As a result a new

chapter of great pretense has dawned upon the field of physiological research. This chapter concerns itself with chemical bodies which are supposed to form internal secretions, whose method of control acts by chemic stimulation through the blood stream and also through the sympathetic ganglia.

Professor Starling has given the name "hormones" to these internal secretions. The term hormone is derived from a Greek word meaning "to awake." It seems to be the duty of the hormones to exert a stimulating or inhibitory influence upon the cell life of an organ to which it is carried. That there existed a chemical correlation between the mammary glands and the uterus and the adnexa has been long assumed.

Miss Lane-Claypon and Starling have shown that a specific hormone in the fetal tissues is the cause of the growth of the mammary gland during pregnancy, the blood stream conveying this chemic body to the gland, while Ancel and Bouin have demonstrated the arrest of the mammary gland in the pregnant rabbit after the destruction of all the corpora lutea.

Lombroso and Bolaffio attempted to disprove the fetal hormone theory by means of an experiment made by joining a virgin female rat with one in an early stage of pregnancy, thus establishing a vascular anastomosis between them, found that no change took place in the mammary glands of the former, while pregnancy advanced in the latter. In support of this theory, however, the pygopagous twins, Rosa and Josepha Blazek, give substantial aid. Union of these twins is through a common sacrum. They possess one anus and one vulva, but there are two uteri and two vaginæ. One of the twins became pregnant. Hypertrophy of the mammary glands took place in both and after confinement both secreted milk.

The onset of lactation, after the chemic influence of the fetal hormones has brought about an increased growth of the glands, is explained on the supposition that the stimulus of the fetal hormone has been removed, that the hormone has given rise to anabolic changes, and that with the cessation of its activity, katabolic changes took place resulting in milk secretion.

Further investigations have resulted in the discovery of hormones which act as stimulants to the milk secretion. It was found that a mammary stimulant of great activity was contained in the posterior lobe of the pituitary body. The extracts of the anterior lobe, however, gave negative results. Extracts of the corpus luteum, the pineal body, the mammary

gland and the involuting uterus possess positive qualities as galactogogues.

Ott and Scott, of Philadelphia, in their essay "On the Action of Infundibulin on the Mammary Secretion," were the first to show the stimulation of the mammary secretion with animal extracts containing hormones.

As to animal extracts possessing a chemic substance inhibitory on the mammary secretion, it was determined that both the placenta and the fetus harbor a specific product whose influence has an inhibitory power on milk secretion. From this the inference must be deducted that the hormones generated by the uterine contents interfere with lactation during pregnancy, and that their discharge at parturition permits the passive gland to become active.

An interesting experiment having a direct bearing upon the inhibitory influence on mammary secretion through chemic products from placenta, the developing fetus and even the uterus that are thrown into the blood stream, has been described by d'Errico, who injected defibrinated blood from pregnant bitches into lactating bitches and found that the secretion of milk was greatly diminished.

In endeavoring to glean some enlightenment from these experimental problems to assist me in finding a probable cause for the complete absence of milk in the three primiparæ under my care, a likely inference could be made that the particular hormone whose specific duty it was to excite these cells in the mammary gland to secretory activity, was not generated or if generated did not possess the special stimulus necessary.

Inasmuch as the method of control for the action of hormones is also through the sympathetic ganglia, the shock which these primiparæ suffered during their severe labor, must be looked upon as a potent factor in causing the agalactia.

Report of Cases.—Mrs. H., delivery October 18, 1904. Primipara, aged thirty years, blonde, medium height, stockily built and muscular. Always enjoyed good health. Menstrual function normal, married two years. No miscarriage. Period of gestation free from any discomforts. Breasts never painful. No increase in size during pregnancy. Pigmentation increased in the nipple and areola. Breasts are well developed and very firm. Labor set in a few days before the anticipated time. Labor was severe and lasted about twenty-two hours. Amniotic fluid escaped early during first stage. Position

R. O. P. Forceps delivery. Ether anesthesia; length about thirty minutes; child resuscitated with difficulty. Severe trauma to maternal parts. Child was placed to the breast about six hours after birth, on account of exhausted condition of mother. Thereafter every three hours by day and every four hours by night. No evidence of any colostrum. Breasts firm, not painful. No further enlargement. No evidence of milk eight weeks after birth of child. This woman was very much disappointed in not being able to nurse her baby. In the course of time she desired another baby, and being anxious to nurse it, measures were instituted one year prior to conception with the hope that the condition might be corrected. The breasts were subjected regularly to gentle massage. Electricity was also applied at regular intervals. The best of foods was given, and a sojourn to the seashore and to the mountains was enjoyed. Three and a half years after her first child was born, she was again pregnant. The breasts did not show any change under the treatment. They did not enlarge and remained rather hard. The period of gestation was free from discomfort, and the patient enjoyed excellent health. Labor and delivery, however, proved just as severe as at the first birth. Position L. O. P.; escape of amniotic fluid very early during first stage. Forceps delivery under ether anesthesia. Child required considerable attention. Maternal parts severely traumatized. Child placed to breasts three hours after birth. No colostrum. Eight weeks after labor no milk. No complications during puerperium. Nothing unusual in the history of her mother, who gave birth to two children.

Mrs. B. delivered June 2, 1906. Primipara, aged twenty-six years; brunette; medium height; well developed; always active. Never seriously sick. Menstrual function normal, excepting severe pain a day or two preceding the flow. Married three years. No miscarriage. During the first four months of pregnancy, nausea and vomiting; feet and ankles slightly edematous. Urine contained a slight amount of albumin; urinary salts in excess. Breasts well developed. No increase in size during pregnancy. Only slight pain occasionally. Pigmentation increased in the nipple and areola. Labor started about one week after the anticipated time. Vertex presentation. As labor progressed the position was made out to be R. O. P. Amniotic fluid escaped during first stage. After eighteen hours, during which time the pains were satisfactory, the patient began

to show evidence of weakness. The following three hours no perceptible progress was made. Forceps delivery. Ether anesthesia lasting about twenty minutes. Child easily resuscitated. Maternal trauma severe. The child was placed to the breast four hours after birth. Regularly, every three hours by day, and four hours by night, thereafter. Breasts did not enlarge after labor. No colostrum could be expressed from the glands. No evidence of milk six weeks after the birth of the child. The breasts have remained the same in size. No complications during the puerperium. This woman has not been pregnant since. There is nothing unusual in the history of her mother, who gave birth to five children.

Mrs. W., delivered December 12, 1911. Primipara, aged thirty-two years; brunette. Above average height; splendid athletic build. Always enjoyed excellent health. No menstrual disturbance. Married two years and six months; later became pregnant. After fifth month feet and legs began to swell. Urine contained, at times, considerable albumin and urinary salts in excess. Pigmentation increased in the nipple and areola. Breasts painful and enlarged. Labor was severe and lasted about twenty hours. Amniotic fluid escaped shortly after labor had set in. Breech presentation. Delivery with forceps under ether anesthesia, lasting about thirty minutes. Difficulty in resuscitating child. Vaginal tear extensive, involving bowel. Child put to breasts about four hours after birth. Regularly thereafter every three hours by day, and every four hours by night. A small quantity of colostrum in both breasts was noticeable until five days after delivery. After that it was impossible to express any colostrum. No milk appeared and six weeks after labor all hope of the gland secreting milk was abandoned. There was no complication during the puerperium. Mother had a family of five children, and nursed all up to the weaning time.

DELMAR BUILDING.

DISCUSSION.

Dr. Hugo O. Pantzer, Indianapolis.—Without wishing to enter on a philosophical consideration of this subject, I desire simply to mention what is of interest in a tangential way. The *Zent. für Gynek.* within the last year contained an article by a Hungarian author who had investigated the reason why the breast tissue does not atrophy from disuse, in individuals who

do not give birth to a child until very late in life and who yet have functioning breasts. He asks, why does not the tissue of the breast atrophy from disuse as do other tissues during disuse? His investigations tended to show that there was a regular stimulation of the mammary glands at every monthly period.

Dr. Reder (closing).—I made as thorough inquiry as possible. As to the history of these patients with reference to the mammary glands, there was absolutely no enlargement; in two of the cases the breasts were well developed, and there was no pain. In the woman whose breasts were enlarged, colostrum was obtained up to the fifth day. It was impossible to get colostrum from the breasts of the other two women.

SOME MORAL AND ETHICAL ASPECTS OF FETICIDE.

BY
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In recent years much wrong doing has been exposed in almost every walk of life. Mismanagement, abuse of privilege, and betrayal of confidence are some of the evils that have been perpetrated in the judiciary, the legal, the municipal and corporate bodies of our country. When exposed and investigation instituted, it almost invariably developed that the evil had existed for years and had been handed down from predecessors. It required some particularly atrocious transgression of the law or the energies of some ambitious muckraker to bring the existing wrong to light.

The medical profession with few exceptions has always been above suspicion, because as a class its members are honorable, self-sacrificing and above all, they enjoy the confidence of the laity. Through the energies of the medical profession the world is better physically to-day than at any previous time, and it has done wonders in a moral sense by its crusade in the prevention, control, and cure of venereal diseases.

There is one criticism of the profession, however, that can be made; and that is the attitude which a large number of the medical fraternity hold to-day regarding the life of the unborn child.

The laws of the land allow the profession almost unlimited power in administering the health of the people, and it can be truthfully said that never has the medical profession abused that privilege. Equally elastic are the laws concerning the induction of abortion, practically the only restriction being the consultation of two or more physicians. It cannot be honestly said the medical profession is at all times as careful when considering the life of the unborn child as it should be. Not that its members wilfully destroy life, but their teaching and moral aspect of the subject is not always in keeping with its otherwise high standard.

That abortion occurs in a large percentage of all gestations is well known and an accepted fact. That this percentage is

increasing is also apparent to those whose work is obstetrical and gynecological. So general has abortion become that it is one of the most serious problems confronting us to-day. There was a time when the induction of abortion was a serious matter, and the oath of Hippocrates referred to it particularly. While it is true that abortion has been practised at all times, yet the prevalence of the crime to-day is so great that it seriously effects the health and welfare of our people.

A careful consideration of the moral aspect of feticide brings prominently to our attention several facts.

First, the large number of abortions that are performed is becoming a serious menance to the health and welfare of our people.

Second, such termination of human life is a most serious matter and every possible safeguard should be taken to restrict it.

Third, there seems to be a gradually increasing tendency on the part of the laity as well as the profession to take advantage of the law and teaching which permits and sanctions the induction of abortion.

Fourth, in most medical colleges the student has no positive teaching on the moral aspects of abortion, and he is allowed to work out his own ideas with regard to the ethical aspects of it.

Fifth, there is a gradual loss of respect for religious teaching which has always condemned the taking of the life of an unborn and unbaptized child as a sin and murder.

Sixth, many, if not all, the members of this association are teachers and leaders in obstetrics and gynecology in their respective communities and the responsibility of this teaching rests with us.

When disscusing abortion as the termination of life we frequently are met with the statement that there is no life until a certain period commonly termed "quickening." It is surprising how prevalent this idea is, even among the profession. In this day of advanced thought and enlightenment it should not be necessary to present arguments as to the exact time when the fetus is animated by its own specific principal of life—its human soul. Modern scientists have demonstrated that from the very moment of conception, the human embryo is animated by the same principal of vitality that animates the man. Fortunately there are very few who still cling to the teaching of Aristotle, that the rational soul is not infused till the fetus is sufficiently developed to receive it. He and his disciples taught that we first lived a

vegetative life, then an animal soul supplanted the vegetative principle, but the human soul was not infused into the body until the fortieth day for a male and the eightieth day for a female. Today such belief is contrary to all facts and reason.

At one time our laws recognized a fetus either as *animatus* or *inanimatus*, but such a distinction is not based on biologic teaching. A newly born babe has a legal standing not accorded the child *in utero*. No one is allowed to take a human life for any reason whatsoever, except the officers of the state, when after legal process a life is declared forfeited because of the commission of a crime. However, before a verdict is rendered and sentence pronounced, the accused is always given an opportunity to defend himself and state his side of the case. The child *in utero*, however, is helpless, for the law allows its life to be sacrificed under certain conditions and in most states no distinction is made as to the viability of the fetus, although in some states the punishment is greater when the operation is performed after quickening. There is assuredly no biologic or common-sense foundation for such statutes, and their enactment is another evidence of the antiquated and inconsistent laws of our times.

However, in every statute on this subject there is a clause which states that abortion is allowed only if "necessary to preserve the life of the mother." Unfortunately the privilege has been made so flexible that frequently the slightest indisposition of the mother is used as a pretext, and the life of the fetus is terminated with the conscience-satisfying excuse that it was "necessary to preserve the life of the mother." Such subversion of morals for the sake of sentiment is a reflexion on our intelligence and is contrary to law and order. If the unborn child had attorneys to represent it at the courts of justice there would be a higher regard for its life which at present is almost a negative factor. To commit a person to an insane asylum in most states requires the sworn and certified statement of at least two physicians, both of whom must have had at least five years graduate experience. Another method of committment is by court action of a lunacy commission. As the unjust committment of a person would render the physician subject to law-suit and heavy damages, the members of the medical profession are extremely careful in signing such documents. If the same safe-guards were taken when the question arises as to taking the life of the child *in utero* the physician would exercise

the greatest caution, and as a result many innocent lives would be saved which are now sacrificed on the altar of "necessary to save the life of the mother."

Let us consider the arguments that are advanced by those who sanction abortion. They claim (1) that the life of the mother is more valuable than the life of the future child; (2) that no moral wrong is committed; (3) that the fetus threatens the life of the mother and is therefore an aggressor; (4) that the removal of the fetus will save the mother, and (5) that medical authorities recommend rather than condemn the operation.

The physician has no legal right to judge and decide the respective value of different lives, neither is he a public executioner, but he usurps such power when he takes the life of the fetus. If the unwelcome presence of an illegitimate child and the attending social disgrace threatens the life of an adult member of the family, would the physician be justified in destroying that child and so save the life of his adult patient? Or would the physician be allowed to kill every syphilitic or every tubercular patient who cannot or will not be removed from his surroundings where he is a positive menace to the lives to those around him? Where will the sentimental moralist draw the line?

Klarmann in his book published in 1905 says: "Abortion is a violation of the law of nature and involves the death of a human being, and it is also a violation of the positive law 'Thou shalt not kill.' The moral aspect of abortion must therefore be determined by comparison with the fundamental rules of morality, that is, with the commandments of God, the voice of conscience, and the common consent of the human race." Many people are under the impression that arguments opposing the induction of abortion are founded solely on religious teachings. A consideration of the different aspects of the subject would soon demonstrate that such is by no means the case, for it is a question of natural law, of physical development and of common justice.

Even the law does not allow one individual to take the life of another except in self-defence or when protecting the life of another from an unjust aggressor. The responsibility for the child's presence in the womb rests with the parents—the child had no choice in the matter—therefore it cannot be called an unjust aggressor. If the physiological placing of the fetus results in a pathological condition to the mother, surely the child cannot be blamed as an unjust aggressor and therefore be destroyed.

In the light of our present uncertain knowledge of the toxemias of pregnancy we cannot always state positively that the mere presence of the fetus is the cause of the existing pathology, neither does the removal of the fetus effect a cure in all cases.

Not infrequently it is advised to empty the uterus when conditions arise that threaten the life of the mother, as for instance, in eclampsia. We know with the nonoperative plan of treatment many such patients recover. It is equally true that with emptying of the uterus the patient dies in a considerable number of cases. (Zweifel's statistics show that about 20 per cent. of the cases died under the expectant plan of treatment, while about 12 per cent. died under active treatment. (Zweifel, Zur Behandlung der Eklampsie, *Zentralblatt für Gyn.*)

Another therapeutic indication for the induction of abortion is excessive vomiting or hyperemesis gravidarum. It is extremely difficult to define what actually constitutes the so-called pernicious vomiting of pregnancy. In many instances it is the patient rather than the condition that is pernicious, and the physician should be extremely careful in all cases to make the differentiation. Many patients knowing that the induction of abortion is countenanced by the profession will purposely simulate and prolong the vomiting and distress, knowing that in the end the physician will probably rid her of her unwelcome progeny. Under no other circumstances would the intelligent physician allow himself to be so duped and to be the tool of an unscrupulous patient.

Some may object and say that such views place ethics and morality above medical teaching and science; but in view of the confusion and contradiction among the opinions now held regarding this subject, even those who object must admit that medical knowledge covering the toxemias and dangers of pregnancy is far from an exact science. A recent writer has stated that there must be fundamental principals in morals as well as in medicine, and the fundamental principal of the moral practice of medicine should not be to take life even if by taking one life another may be saved, and that the moral law in such cases surely is more important than the uncertain medical teaching of a few.

There is another phase of the matter, although it may seem foreign to the subject of this paper, and that is the indifferent attitude of the members of the profession when the subject of the termination of pregnancy is broached by a patient. While he would scorn even the suggestion of performing abortion

himself, the physician does not do his full duty unless he indicates to his patient the great physical danger she risks by having the pregnancy terminated, and while not an expounder of the gospel, he should as a conscientious, moral physician clearly tell his patient that the interruption of pregnancy is nothing short of absolute murder, and as a practical argument, he can unhesitatingly explain the great physical harm that frequently results from self-induced and criminal abortion. Our medical journals always contain articles on the importance of prophylaxis, care, and treatment of disease, but very little is written on the saving of life by pointing out the danger resulting from abortion.

I am safe in saying that almost every physician is frequently asked by some of his patients to give medicine or treatments to rid the womb of its unwelcome contents. Not a few of these unprincipled persons even ask for the direct performance of abortion by the physician. It is equally true that scarcely any reputable physician would do such a thing, but unfortunately we are frequently told that while the physician himself refused to do any direct criminal act, he would tell the patient how abortions are sometimes performed. In this way he thinks he is doing a favor for his patient while he himself assumes no moral or legal responsibility. Nothing could be more erroneous, for even the statutes declare such a physician guilty of a criminal act, and morally, he would be guilty also.

There are many women who do not seem to appreciate the great seriousness of the offense of criminal abortion. Like many others they believe that up to a certain period in the development of the fetus it has no rights as a human being, and that they have the right and privilege to destroy it if they so desire. They see the apathy toward induced abortion on the part of their neighbors, physicians, and the world at large, and are led to think lightly of the offense. If they were told that causing a miscarriage intentionally is a violation of the law to be punished on conviction by confinement in the state prison, they would pay little heed to the declaration, for they know that the law is seldom enforced, especially when a woman herself commits the crime. Most women are ignorant of the morbidity almost sure to follow an induced abortion, and they do not realize the tremendous danger of infection, nor the liability to sterility or a serious operation, if they survive. All these facts and considerations should be constantly held up before the woman by her medical adviser, for, knowing such dangers many

women would undoubtedly hesitate before undertaking such a dangerous procedure.

In his paper on "The Premature Interruption of Pregnancy," read before this society in 1907, Lyons suggested that before abortion is therapeutically induced the advice of one or more well-informed obstetricians should be obtained, and the advice of the coroner's physician and the consent of the health commissioner's office may well be added. Whether such precautions would be practical or not is a question, but at any rate in proper hands, it would give the fetus more legal rights than it has at present. There is a gradual awakening on the part of sociologists and economists to the importance of this subject, but as in most matters which concern the public health and welfare, the real responsibility rests with us who have devoted our studies and our energies to the question of generation. It is a duty that we owe the public, our patients, ourselves and our profession, to demonstrate these moral and physical truths, for often our arguments would have more weight than any philosophical, economical or religious reasoning.

To the great credit of the modern obstetrician it can be said that by the improved technic of Cesarean section, symphyseotomy and the other conservative operations, hundreds of children are being born who otherwise would be victims of such horrible mutilating operations as craniotomy, embryotomy, etc. The brilliant results, the low mortality, and the lessened morbidity of Cesarean section are so pronounced and so well known to us all that statistics need not be given to show that it is no longer the dreaded operation of thirty or forty years ago. Indeed it is a rare thing now to hear of craniotomy on the living child, and the one who does such an elective operation to-day, especially with modern facilities and hospitals at our command, is not worthy of the honor the name physician confers.

It is the exceptional teacher and writer on obstetrics and diseases of women who properly instructs his students on this important subject; more often the contrary is true and his lectures abound with references and explicit directions as to when and how pregnancy should be terminated. Is it any wonder then that the student graduates from the class room with little or no moral instruction and goes forth to follow in the steps of Herod in the slaughter of the innocent. I repeat, that much of the responsibility rests with us as teachers and writers; that it should be a matter of conscience with us, and that we are not true to our

noble calling unless we teach our students to have a sincere regard for the life of the unborn.

Gynecological and obstetric literature can boast of very few articles treating of the moral aspect of feticide, but the few references I have found are so in accord with the present discussion, and were so ably written by masters in our profession, that I need not apologize for quoting from their contributions on the subject. Bacon, in discussing the legal responsibilities of the physicians (Chairman's address in the section on Obstetrics and Diseases of Women, A. M. A., 1906) states: "In deciding on moral responsibilities, however, the physician may have great difficulty. The statute law is frequently behind or at variance with the ethical law and the variance seems to be marked in this case. Many operations would be legally safe that would be undoubtedly wrong. It is difficult to deny to the human fetus the innate right of every human being, the equal right of life. On the protection of this moral law the child *in utero* must chiefly rely for its preservation. The moral responsibilities of the physician for the child *in utero* are greater than his legal responsibilities. It is hard to dispute Pinard when he holds that neither the father, the mother, the physician, nor any other person has the right of life or death over the fetus. The frequency and boldness with which that right is claimed by the father or by the relatives of the mother should meet with firm resistance. I see no grounds on which the physician can stand when he decided to destroy the fetus, except a kind of *implied* authorization by the state which agrees to uphold the right of the mother to self-preservation when her life is endangered by that of the fetus."

In this connection I wish to quote from an address delivered by Dr. Edw. Ill, before this association in 1908. "Neither can convenience, professional courtesy, actual suffering on the part of the mother, nor social disgrace ever be an indication for what to me would be a most horrible crime, the murder of the defenseless. I have no doubt that what has happened to me has happened to all of you who are working in this chosen part of the practice of medicine. We are called upon to induce an abortion for hyperemesis long before the mother has reached that stage when her life becomes endangered, simply because the family have forced the attendant to the wall with their sympathetic wailings, or because the attendant himself has reached the end of his resources. His patience and his sym-

pathy have run away with his reason, or if we shall express ourselves less charitably he has become tired of the case but feels that he cannot give it up to another. I can sympathize with him, for I know of no more aggravating condition, where for weeks our efforts are little more than comforting, but I cannot consent to be a party to the destruction of unborn life, so long as the mother is not in absolute danger, and until I have personally used all resources at my command, which includes treatment away from home and systematic trained nursing. Not that I think that my professional friends cannot do equally well, but my conscience must be quieted, and I must personally have failed in the endeavor. With a large experience and much patience, I have thus far never been obliged to empty the uterus previous to the viability of the fetus, and I have never seen the mother die. Many cases have given me sleepless nights, as I often felt that the mother was nearing that brink where the uterine contents must be interfered with. I am sure that many more children should be saved. The frequent deaths of the unborn, as caused by the regular profession legitimately must ever remain a sign of weakness and impotence of an otherwise noble and humane profession."

I do not infer by these remarks that the moral tone of the medical profession as a body is low, for never in the history of medicine was the moral sentiment so high as to-day. In spite of the fact that criminal abortion is increasing, I maintain that the practitioners of medicine in general are too honorable and respect their noble calling too much to resort to practices so abhorrent to every moral instinct. They value their reputations and love their work too truly to jeopardize their honor by resorting to such vile practices as criminal abortion. A few medical men may stoop to this crime but the real propagators of the evil are midwives, nonlicensed doctors and women themselves.

The wonderful possibilities for improvement which can take place in this humane aspect of the physician's work are incalculable. The results may be slow but I feel convinced that here perhaps more than anywhere else, is the opportunity for us as teachers and leaders in our chosen work to demonstrate the powerful influence for good that we can exert. It should be the steadfast aim of every upright citizen to do all in his power to prevent the great moral and physical crime of abortion and race suicide which is sweeping over our country. To accomplish this purpose, it requires the concerted action not only of the

clergy but also the members of the medical profession, whose attitude in the matter should never be half-hearted or wavering, but ever positive, steadfast, absolute.

I appreciate the fact that in discussing this delicate subject my views are at variance with many whose opinions and teachings are accepted by the entire medical world, neither will my arguments have much weight with those who unfortunately have lost one or more of the so-called "desperate" cases, but I contend that where one mother is lost, hundreds if not thousands of innocent lives are sacrificed. I plead for a more humane view and consideration of the rights of the innocent unborn child.

714 JENKIN'S BUILDING.

DISCUSSION.

DR. ROLAND E. SKEEL, Cleveland.—I am glad that the author in his last two pages modified his previous remarks somewhat since all which preceded might be considered as a tirade against the medical profession for carrying out the induction of abortion and premature labor even when performed under the belief that they were necessary to save the life of the mother. No man in the State of Ohio has raised his voice oftener than myself against the practice of *criminal* abortion, but it must be regarded as a very unfortunate thing indeed that a theological view-point has been allowed to enter that which should be a calm scientific consideration of a serious medical problem.

As scientific men we have just one thing to consider. Is there a dead line which exists when the time comes that the mother's life seems really jeopardized by the presence in her uterus of an unborn fetus? If we believe that this time does sometimes come I ask you to put the question to yourself whether you would let your wife *and* unborn child die or try to save one, the mother, at the expense of the other, the fetus.

Under these circumstances there could be but one answer to the question and all the theological sophisms which might be introduced would not suffice to change your opinion in the slightest.

The real question at hand is whether such time ever comes and at present the great majority of us believe that it does, but only time and unprejudiced consideration of the subject in a scientific manner by scientific men will suffice to definitely determine whether our belief is correct.

Every man should teach that criminal abortion is wrong, always wrong, but with our present knowledge the legal removal of the fetus from the uterus is entirely justified when we believe the mother is likely to die without such interference for if the mother dies both die and such interference no law based upon theological ground can ever prevent.

Dr. Edward J. Ill, Newark.—This subject is one which is very close to my heart. When I was president, fifteen years ago, I spoke for the rights of the unborn, and at that time I said the unborn fetus should, under certain circumstances, have a representative in a court of justice. After practising medicine for thirty-seven years, and the special branch in which we are so much interested for twenty-seven years, I have been forced to produce two abortions. I confess that I have had many a sleepless night about many other cases, but they came out all right and I never lost a mother and never lost a fetus. As I understand the paper, the author is not questioning the right of the practitioner to induce abortion in certain cases in which it is indicated, but what he wants to impress upon our minds is this, that we are not to kill the fetus, except for the most stringent necessity, and there is certainly no need for it in the vast majority of cases in which it is done. Let us be honest about it and look the question fully and fearlessly in the face. There is a little hospital of sixty beds in my neighborhood. They do more abortions in that hospital, for trivial cases, in a month than I have done in all my life. When I read the paper I have spoken of, one of my good friends said, "Your paper would have made a much greater impression on us if you had not been a prominent member of the church." I am no prominent member of any church; they are all alike to me. This is a matter of conscience, and conscience is a matter of education. Conscience is also a matter of public opinion. With rare exceptions, you will be able to get an American court or jury to condemn a criminal abortionist. We all know that we have tried it for years. All of us have tried to have these fellows convicted. In my city we have one man sentenced to seven years of penal servitude. This was four years ago. He is still out. Nobody dares to place him where he belongs. Prominent people do not want this man hurt, no matter whether they are church people or not. They do not believe that the fetus has a soul in its body at the moment of conception. If it has a soul, it is there at the moment of conception, and that fetus has as much right to live, unless it endangers the life of its mother, as you and I have a right to live, and the State is in duty bound to protect us before we are born. The State has not done it. The Church has not succeeded in doing it. It is going to be simply a matter of education.

Dr. J. Henry Carstens, Detroit.—Dr. Weiss asked me to discuss his paper, and I told him I might say something on it that he would not like. I should like to ask Dr. Weiss if he ever saw a woman die as the result of pregnancy from vomiting, eclampsia, or some similar condition.

Dr. Weiss.—I have seen them die from eclampsia.

Dr. Carstens.—From uncontrollable vomiting.

Dr. Weiss.—I have seen them die if the uterus was not emptied, and by taking these patients to a good hospital, they got well.

Dr. Carstens.—They often die. I have seen a number of them die from the uncontrollable vomiting of pregnancy. I have seen them die from progressive kidney trouble before they even had puerperal eclampsia. There is no doubt at all that once in a while a woman will die who is pregnant if that child is not removed.

As to the question of abortion. Every teacher in this country warns his students against it. As a teacher, I resent the aspersion cast on the teachers of obstetrics, namely, that they do not teach students it is a crime to commit abortion. I say they do. In the State of Michigan, we have a law bearing on this point. No one has a right to commit an abortion unless there has been a consultation of two physicians, and if they agree that a woman cannot have a child without greatly endangering her life an abortion can be induced. I think it is right to interfere under such circumstances. I for one will not sit by the bedside of a woman and see that woman die. If I cannot save both lives, I save one. But I fully agree with Dr. Ill that abortion is rarely indicated.

Dr. Miles F. Porter, Ft. Wayne.—I have not lived as long, nor have I had the experience that my friend Dr. Carstens has had, but during the time I have lived I have had considerable experience and on two occasions I have produced abortions, and I know as well as I know the sun will shine to-morrow morning, I did it because I did not know any better. I never saw a woman die of uncontrollable vomiting of pregnancy, nor have I one iota of proof that a woman's life is saved from eclampsia because her uterus is emptied. I have seen women get well after the uterus had been emptied, and I have seen them die after the uterus had been emptied. Again, I have seen other women with eclampsia die after the uterus was emptied by natural forces. Any practitioner would empty the uterus in such cases if he thought he was going to save his patient's life by so doing, but I cannot tell when that time comes, and I am not yet acquainted with the doctor that can. We have no better statistics on the saving of life from uncontrollable vomiting of pregnancy or from eclampsia than those that have been published by some of our European friends, and I am sorry I cannot mention the names of the men and the institutions in which they work. I think Edinborough is one of the places I have in mind. We know they have discarded the notion that it is necessary to empty the uterus when a woman has vomiting that cannot be controlled. Let me give you the history of a case. This woman aborted three times. She came under the care of a practitioner who was formerly my assistant. The case was studied very carefully for a short time, and I suggested that the woman be given 20 grains of desiccated thyroid three times a day. This was done and she left the hospital inside of a few days. If you can demonstrate that the poison is being generated in the uterus, it is well to remove the child by emptying the uterus, but unless you can do that, you have no

right to do it, and personally I have not had the evidence offered to me, nor have I seen it in a convincing form.

Dr. John Norvall Bell, Detroit.—In reference to what Dr. Porter has said, I have had the actual experience of seeing in consultation a patient with the uncontrollable vomiting of pregnancy, where there was not the slightest doubt she could not control the vomiting. She was not trying to get rid of the child. I saw her twice in consultation, and both times advised emptying of the uterus. They dilly-dallied, and finally called in another specialist, and he in deference to religious views said he would dilate the uterus slowly, but not empty it. This he did, and the woman died.

In another case, I had the woman under observation myself. She vomited and vomited. I was the fourth physician who had seen the case. She kept on vomiting, and I called another physician in consultation who was of the same religious faith as this woman and her people. He finally conceded that there was nothing to do but to take the patient to a hospital and empty the uterus. This was done, the uterus was emptied, and when the operation was completed you could not feel the pulse at all. By auscultation it counted 160. She was given salines, put back to bed, and got well promptly.

Dr. Porter.—Did you make a postmortem examination on the first case?

Dr. Bell.—No.

Dr. Charles L. Bonifield, Cincinnati.—I simply want to make one remark in connection with this discussion. When a man who does surgery makes a diagnosis of ectopic gestation, he immediately opens the abdomen and removes it. Once in a great while under favorable circumstances an ectopic child goes to term and is delivered alive, but this happens so seldom and the danger to the mother of carrying an ectopic to term are so great that operators the world over ignore the rights of the child. In the toxinemia of pregnancy, the majority of mothers will get along alright under appropriate treatment, but there are cases when the life of the mother is so jeopardized by the presence of the child *in utero* that we must ignore the life of the child. I have not been so fortunate as Dr. Ill. I have had these women die in the hospital under my care and I have worried over them more than any other class of patients. The attendant to be worthy of the name of doctor must do something to save the mother. Like Dr. Carstens, I do not like the insinuation that we do not teach our students not to produce abortion. I always deliver at least two lectures on the evil consequences of induced abortion.

Dr. A. S. Hotaling, Syracuse.—I want to take exception to the statement that there is no scientific way of determining whether a patient with pernicious vomiting is in a serious condition or not. Any of you who have followed the work of Williams, Ewing, Stone and Wolf, know the changes occurring in the

ammonia coefficient, due to altered metabolism. In toxic vomiting the ammonia nitrogen is increased. There is only one general exception, and that is starvation acidosis, which you may have in the vomiting of pregnancy. Starvation acidosis, as a rule, can be easily diagnosed from a true toxemia by the administration of bicarbonate of sodium, preferably intravenously or by mouth. Within a few hours the ammonia will take a decided drop, whereas in toxic vomiting the ammonia percentage remains unchanged. When you have an ammonia coefficient which is in excess of 10 per cent. and it continues to increase in spite of eliminative treatment and rectal nourishment, you are dealing with toxic vomiting. I have seen two women die with toxic vomiting. Only recently we had a case in the hospital, a woman three months pregnant, who had been vomiting for several weeks. The first examination showed 8.8 per cent. ammonia nitrogen, which steadily increased. We advised abortion which was refused on account of religious scruples. The ammonia increased to 32 per cent. The woman died, developing a marked jaundice just before death. Autopsy was refused. We were probably dealing with an acute yellow atrophy, toxic vomiting, or both. The woman's life, I have no doubt, would have been saved had we aborted early. In cases of toxic vomiting where the ammonia coefficient is above 10 per cent., and continues to increase regardless of treatment, I believe abortion is absolutely indicated and that it should be done early before pathological changes have occurred which will render the operation useless.

Dr. Gordon K. Dickinson, Jersey City.—I want to say a word or two with reference to thyroid extract. Since I have been using it I have not seen a case of death from pernicious vomiting, nor have I had to empty the uterus. The sheep's thyroid gland does not contain as much arsenic as the human, consequently it may be wise to add to the thyroid extract a moderate amount of arsenic if you give it.

I am trying with all of my effort to fight tuberculosis in our state, and I have ordered several times in consultation the emptying of the uterus in cases of tuberculosis which were advancing. There may be those who differ from me in this regard.

Dr. Magnus A. Tate, Cincinnati.—I am one of those who believe that criminal abortion is on the decrease and not on the increase, as was stated by one of the speakers.

I cannot understand how any educated physician would make such a statement as has been made here, that there is no kind of case in which he would induce abortion. In this connection, I want to recite briefly a case in which I induced abortion this past year, and I was justified because I saved a woman's life.

Thirteen years ago this woman lived in Cleveland where she had her baby, going to full term. She developed a mild Bright's disease during the pregnant state, which persisted. It was almost nine months following this delivery before she was able

to be up and around and the sight of one eye was permanently lost.

The baby died about three months after it was born. A period of thirteen years elapsed when she again became pregnant.

When I saw her about the second month she had some albumin in the urine. I carried her along as well as I could until she reached the sixth month, when I thought it advisable to take her to the hospital because I wanted to try the Fisher salt solution.

She was given the Fischer salt solution, thyroid extract, arsenic and tonics at various times without effect. Her condition was pitiable. Her hands and feet were at least five times as large as normal, also her whole body was swollen. She was blind in the right, and the left eye was very painful and vision blurred. An oculist was called in, who made a careful examination and gave his opinion that if she was not relieved she would be totally blind in the course of ten days. Her urine was loaded with albumin, almost solid. I called in two physicians as consultants, and we all decided the woman would die unless delivered promptly. At the time I operated she was in a state of low muttering delirium.

Abortion was induced and that woman to-day is up and around but she still has dimness of vision in the left eye, but her oculist assures me there is a daily improvement. In this case I think I did my duty as a physician and I feel proud of the result.

Dr. Rufus B. Hall, Cincinnati.—The discussion hinges largely on the matter of sentiment. Everyone in my hearing believes that it is correct under the conditions narrated by the last speaker, when there is no other way to save the mother's life, to induce abortion. It is not only our duty, but we should for humanitarian reasons be compelled to do it. Both the mother and child would die, and there is no oppeal from it. Let us take the case reported. There was no appeal in that case because the woman would have died if the uterus had not been emptied. In inducing abortion you lose the child, but you save the mother. I have been engaged in the practice of medicine for forty years, and during that time I have produced abortion under these conditions but twice. In each instance there was consultation, and in each instance I am confident I saved the mother's life, but I sacrificed the life of the child. We ought not to allow sentiment to carry us away in this matter. Dr. Tate saved this poor woman who is blind in one eye from being blind in the other. We should try to save life at all times. There are cases that should be carefully weighed, we should balance them up, do our duty, and then save the mother's life and sacrifice that of the child when we must.

AN ABDOMINAL CASE OR TWO OUT OF THE ORDINARY

BY
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(With Four Illustrations.)

THIS short paper will simply relate, rather in abstract, four cases which I hope are sufficiently out of the ordinary to justify their report.

CASE I. *Extensive Bladder Rupture; Eighteen Hours between Injury and Repair; Recovery.*—In July, 1908, I was called to attend Mr. M., a young man of fine physique, who sustained a fall of 20 feet or more, in which he, with six companions, was carried over a defective bridge in a large automobile. After recovering from the primary shock, he suffered great pain in the lower abdomen, with inability to void urine. Morphine was given him and the catheter relieved him of blood and urine. The bladder was irrigated two or three times, the irrigating fluid finally coming away clear. Sixteen hours after the fall I saw him, after being brought twenty miles to the city in an automobile. At this time he gave every evidence of beginning peritonitis, with fast pulse and rising temperature. Immediate operation was advised, a tentative diagnosis of rupture of the bladder being made. Upon opening the abdomen a large quantity of blood clots and urine escaped, and the first stages of an active peritonitis were evident. A wound, quite 4 inches long, was found in the bladder vault, extending to within an inch of the posterior reflection. Quite a coil of the small intestine had become herniated into the bladder. This portion showed more advanced peritonitis. It was decided at once that primary closure of the large rent was out of the question. After cleansing the pelvis of the clots and urine by gentle sponging only, the parietal peritoneum was carried down and sutured with catgut to the posterior angle of the bladder rent, then a suture continued around either side, closing the bladder opening off from the cavity and thus rendering it extraperitoneal. A large glass drain was placed back of the bladder to the bottom of the pelvis; also two large rubber-covered gauze wicks. A large catheter drained the bladder from above. The glass drain was

removed in eighteen hours; the gauze in forty-eight hours. The catheter acted perfectly for eleven days. At the end of four weeks, urine passed by the natural channel and this young man made an ideal recovery in a comparatively short time. He was placed in the Fowler position and saline injections by the rectum were kept up for five days. The wound healed primarily down to the drains and is now firm and strong throughout. The patient has been in perfect health and none the worse for his terrible experience up to a second accident which occurred in the last few months.

Dr. Louis Frank saw this case with me and was present at the operation. The conduct of the case during the first sixteen hours was in other hands, and the bladder irrigation was done before I saw him.

Case II. *Epispadic Extrophy of Bladder; Autoplastic Repair; very gratifying Result.*—At the meeting of the American Medical Association at Atlantic City, in June, 1900, I reported a successful case of epispadic bladder extrophy, and exhibited the patient, a young man then twenty years of age, one year after the finished operation and three years after the first operation. His case has been proven by time to be far more successful than I ever dreamed of. This young man has been able to conduct a large mercantile business for ten years, is married, and from every standpoint, the marital relation as well as otherwise, is most prosperous and happy.

Case II is a counterpart of the one referred to above, and just as successful.

This boy, æt. twelve, was sent to me by Dr. Otto C. Baumgartner, of Rockport, Ind. He was well developed for his age, was dressed like a girl, and consequently sprinkled the earth wherever he went, an object of absolute misery. He was placed in the Children's Free Hospital, in Louisville, June 7, 1907, and after spending eighteen days getting the part into the best condition possible, the first attempt at repair was done on June 25, nearly three weeks being required to improve the local condition and get rid of the calcareous deposits about the parts. The epispadic penis was very short and drawn back into a sulcus at the lower part of the opening. The posterior bladder wall, with discharging ureters, presented a convex surface far in front of the abdominal plane, about the size of the half of a baseball or larger. When recumbent or in the Trendelenburg position, a concave sulcus of corresponding dimensions presented.

The first step in the operation was to separate the skin from the mucous membrane on either side of this sulcus, down to the end of the flat penis, one-third of the circumference at the top

FIG. 1.—Case II.

FIG. 2.—Case II.

being left. Then, by careful dissection, I loosened up the overlying pudendal tissues. This dissection was done with the finger and was carried well out toward the groin. Then with strong

forceps making traction upward and inward, I still further loosened the tissues thus freed, bringing the mucous membrane along with the skin. When this loosening and stretching had been done sufficiently to allow the separated pudendal structures to be brought together in the middle line, they were closed with two sets of sutures; one line of buried chromicized catgut No. 1, which inverted the inner or mucous membrane side, and another

Fig. 3.—Case II.

of interrupted silkworm gut, which everted the outer or skin side. Over this a dressing of collodion and cotton was applied. The button-hole-like opening above was used to drain the urine away, the patient being required to maintain the Trendelenburg position. No good resulted from this operation, except probably

the piling up of tissue to be used to better advantage at the next attempt.

Six other operations were done during the eighteen months following, and finally, as in the young man previously mentioned, closure was completed, the same flap-splitting method being used, each time gaining something. The new bladder has now been performing its function for two and one-half years and is in a perfectly healthy condition. The penis has developed quite a good deal. Of course an ordinary urinal is neccessary to gather the urine, although at night four or five ounces are retained and passed on arising.

In this kind of work much patience is required, both on the part of the patient and the surgeon, and many difficulties are to be overcome, principal among which are, the great tension on the sutures, the septic surroundings, the difficulty of drawing away the urine, and the constant lack of rest of the parts due to the tendency to erections Nothwithstanding all the difficulties, the benefits justify one in the efforts at autoplastic work.

I still hold the same opinion as to the propriety of autoplastic work that I did when reporting the case of the young man; that is, when the patient is a male. In females, the transplantation of the ureters into the intestine is the only thing to do. The only one I have tried, however, died promptly from ascending infection.

Of course, reference to the technic of Maydl's or Peters' operation is unnecessary here, as every one is familiar with them. One or the other, according to the indications, should be used in the female, always bearing in mind the possibility of disastrous results, both primarily and secondarily, particularly in the hands of the rank and file of surgeons.

CASE III. *Operation for the Relief of the very Distressing Bladder and Bowel Complications of Late Locomotor Ataxia.*—Mr. S., æt. fifty, came under my care July 6, 1908. Two years previously he had consulted me, begging that something surgical be done to render his existence less terrible. This history was obtained: He had acquired syphilis twelve years before, for which he had been treated in rather a careless way. For three years he had shown symptoms of tabes, which had progressed rapidly until he was the most forlorn and miserable mortal I believe I had ever been called upon to treat. He was emaciated to the last degree; had acquired the morphine habit and was taking 10 to 20 grains a day. Was on crutches because of his

ataxia and a Charcot right ankle and arch of foot. He did not seem to fret about little things like these, but his main misery was in the almost impossibility he experienced in getting his bladder and bowels to act. This was accomplished only by the most strenuous tactics. In wintertime, when snow was plentiful, he could manage with less trouble, but at other times, as a substitute, he used a large tub filled with ice and water. The most drastic purgatives were a part of his daily diet. He would double up like a jack-knife and sit in the bank of snow, or in the ice-water, the refrigeration being necessary to give him power, after the greatest effort, to first empty the bladder and then the bowels, or *vice versa*, I forget which. With all this to hamper him, his courage and desire to care for his family enabled him to continue in charge of a large school. Upon his first visit I could not see anything to be gained by surgery, and frankly told him so. He returned home and I did not hear of him again until the above date, two years later. His condition was then more dreadful in every way, if this was possible. He came, he said, to get relief, and if this was impossible he had decided to commit suicide. I again declined to attempt any surgery, but, happening to find him going through his efforts to relieve his bladder and bowels, I told him I would open the abdomen and see what I could do to overcome the very exaggerated ptosis of bowel and bladder. The sphincteric musculature seemed to be but little affected, but the power to empty either the bladder or bowels voluntarily was nil, and the straining in the effort was dreadful to behold. Without the hope of anything better than a funeral, I opened the abdomen, under chloroform, from the umbilicus to the pubes, and carried out the following procedures:

The bladder was perfectly flaccid and very large. Quite a bunch of urachal remains could be made out. This part was grasped in forceps and the viscus pulled up out of the wound. It looked about like a handkerchief, caught in the middle and pulled through one's fist, reaching well above the umbilicus. I immediately sutured the top of the bladder along the median line, above the umbilicus, with long-lived catgut, then sought the large gut and finally did a colopexy, firmly stitching the sigmoid to the loin. All of the small intestines, along with the bladder, seemed to be packed and crowded toward the pelvic outlet. The abdomen was closed and the man, more dead than alive, was put to bed. He quickly reacted and made a rapid

recovery, the Fowler position being maintained in order that the urine might gravitate to the neck and be voluntarily voided.

He returned home in three weeks and lived for three years, being able to empty his bladder and bowels without difficulty, being always compelled, however, to assume the proverbial fence-corner position, but whether this was habit or a mechanical necessity I do not know. He finally died by accident.

He continued to teach with only slight loss of time, until his death. His ataxic symptoms progressed and he had crutch palsy and several posthypodermic abscesses during this time. However, he did not mind such things as these as long as he could be free of the bladder and bowel difficulties. Under date of April 15, 1909, he wrote me a letter of thanks for the relief he had experienced following the operation. He detailed the intercurrent troubles mentioned above, but said:

"As far as the operation is concerned, I am infinitely relieved. Since the abscesses got well I have had but little trouble. The stools are molded and I use nothing to induce the movement. I can hold water for six hours without inconvenience, and pass it without much trouble, but I have to assume the squatting position. I have not given up yet, even if life has no pleasure in it, but I could not have stood it without the carving you did. That was surely successful, and but for this awful locomotor business, I would be sound and well."

CASE IV. *Large Hydronephrosis; Horseshoe Kidney; Congenital Anomaly of Ureter; Transperitoneal Nephrectomy; Cure.*—Patient, B,. male, æt. sixteen, the son of a tobacco tenant, was brought to me August 1, 1909, by Mr. R. O. Williams, of Ghent, Ky. He came to be treated for an enlargement of the abdomen. After careful examination I diagnosed a large cyst, springing from the kidney. The cyst filled the right side of the abdomen and extended into and across the pelvis to the left iliac fossa. I had no history to help out the diagnosis as Mr. Williams knew none. I did not see this boy again until August 9, on the operating table, as a belated steamboat had landed him, accompanied by his family physician, Dr. H. S. Rowlett, of Carroll County, Ky., in Louisville late the night before. I made an incision along the outer border of the right rectus muscle, 5 inches long, down to the cyst wall, the posterior and anterior peritoneum were clamped together, thus rendering the subsequent work practically extraperitoneal. The bulging cyst was tapped and five pints of amber-colored fluid drawn off, to all appearances

perfectly fresh urine, leaving about one-fourth of the contents in the sac to facilitate the enucleation. This was begun. The separation of the sac wall accomplished with little difficulty. I soon came to the right ureter at the bottom of the sac in the pelvis. This was cut between clamp and ligature, and the separation continued over into the left iliac region and up the left side of sac. To my great surprise I came upon another tube

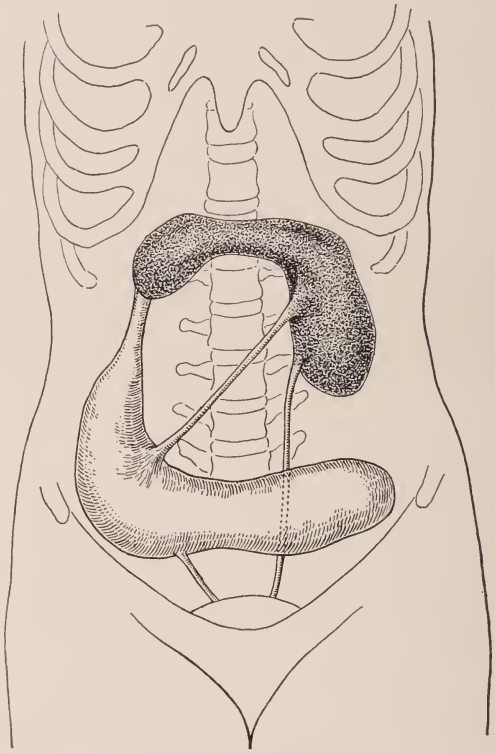

Fig. 4.—Case IV.

running from the sac across the spinal column to the left. I immediately verified the existence of a left ureter, finding one of good size. I traced this short, thick tube to the very large left kidney. It came away near the normal ureter. I tied it off, ligating it as near the kidney as I could, clamping the part nearer the cyst. My greatest trouble was yet to come—I mean trouble in deciding what to do, as I had fallen into new fields—anyway, new fields to me. The enucleation was continued upward, under the ribs, and the upper part freed and brought down,

revealing a small kidney, about the size and shape of an English walnut, with a broad, thick band of kidney tissue connecting it with the hypertrophied left kidney. I hesitated for a moment, as the blood supply of this little kidney looked so large that I feared it might be serving both. I had to go ahead, as backing out was out of the question. After ligating the vessels and the connecting band with catgut, the whole growth was removed and the wound closed without drainage.

After two days it was difficult to keep this chap in bed. On the eighth day he was walking about the hospital and returned home on the tenth day. He has been perfectly well ever since.

A little history, obtained from the mother later, was interesting. The boy, five years before, had been kicked by a mule in the right side, but the tumor had been observed before this injury. It had been noticed that, on rising, he would void a tremendous quantity of urine, and then, in a very short time, would pass as much more. When asked if the tumor would vary in size, she replied; "O, yes; at times it was very much smaller." This proved to me that the sac would fill up by secretion from the left kidney, probably when the boy laid on his right side, and the urine would flow back into the pelvis of the large kidney when in some other position, filling the bladder rapidly through the left ureter.

Drs. McMurtry, Sherrill and Frank, members of this Association, saw this specimen when it was exhibited before a local society. It was, unfortunately, lost by the family doctor who begged for it to show to his own county society. The accompanying drawing from memory gives a very fair idea of the mechanics of the case.

DISCUSSION.

Dr. Julius H. Jacobson, Toledo, O.—I wish to say a word regarding my experience with three cases of exstrophy of the bladder in which an implantation of the ureters into the rectum was made. The first case was a man thirty years old, who had twenty-seven plastic operations performed for the relief of his exstrophy, all without avail. I saw him after he had attempted suicide. I proposed the operation of implantation of the ureters into the large bowel. This operation gave him three years of life which he really enjoyed. He eventually died of ascending infection, or rather from an acute exacerbation of the infection of the kidneys which was present previous to the implantation. The second case was a boy eight years of age. In this case we did a Peters or Bergenheim operation, the extraperitoneal

method of implanting both ureters into the rectum. The operation has been quite successful in this case. He is alive at the present time, the operation having been performed about five years ago. For about a year after the operation he had very frequent discharge of urine from the rectum, which I think was due to the fact that we had implanted the ureters too near the sphincter muscle. At the present time, however, he is gaining in control of the urine and is getting along comfortably.

In looking over the literature of this subject, and in particular the literature pertaining to the congenital communications between the ureters, bladder and rectum, I came across a few cases in which the ureters were congenitally placed in the rectum. In some cases the patients lived quite a long time. I think it was the elder Gross who reported such a case, a man who lived to be almost forty years old, showing that a tolerance for the colon bacillus may be developed by the urinary tract. In thinking the matter over, I resolved that if I should get another case of exstrophy soon after birth, I would do an immediate implantation of the ureters into the rectum. The opportunity came to me and I did the operation again after the method of Peters and Bergenheim but the patient died of ascending infection, within a few days.

I think Dr. Vance is to be congratulated on the very excellent result which he obtained in his case of exstrophy of the bladder. Intestinal implantation, for exstrophy of the bladder I believe will always hold a place in surgery.

Dr. Vance (closing the discussion).—I failed to mention that the bladder in both cases was lined with mucous membrane. There was no hair-bearing tissue turned into it, as was formerly done in almost all autoplastic operations, thereby furnishing nuclei for calcareous deposits.

In the first case, the penis was restored in such a way as to conduct the urine down into the urinal in a normal comfortable way. The patient could retain urine up to 4 or 5 ounces at night. This young man consummated marriage and is happy in his marital relations. So far as I can discover this is the first time such a gratifying result has been obtained.

SOME COMPLICATIONS OF UTERINE FIBROIDS DEMANDING EARLY DIAGNOSIS AND IMMEDIATE OPERATION.

BY

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When one recalls the lines of practice that existed with reference to uterine fibroids some twenty to twenty-five years ago, and considers how relatively innocent they were then considered to be, how medical and nonoperative lines of treatment were considered adequate and sufficient for all classes, save those where interference with delivery of child during labor, serious hemorrhage or the expulsion of a peduncleated fibroid into the vagina with torsion of pedicle and sloughing existed, he is inclined to wonder whether the above title is not somewhat overdrawn.

Yet, during the last decade, this subject has been studied exhaustively by gynecologists the world over, and so much has been said and written upon the pathology, complications, degenerations, and surgical technic of uterine fibroids, that it would seem as though almost the last word had been said and that our knowledge of the condition was full, comprehensive, and along correct lines of thought. This is so, to a very considerable extent, and in the main the treatment of this condition at the present time constitutes one of the bright and illuminating chapters in surgical gynecology, for no operations which we perform are more classical, exact and productive of better results than those designed for the cure of this condition. To be sure, there yet exist differences of opinion as to whether all uterine fibroids should be subjected to operation. Such difference of opinion is legitimate and proper, and perhaps will always exist, or, at least, will continue to have weight until the complications of this disease are studied and considered to such an extent that their importance will completely overshadow in its serious aspect the relatively moderate risk attached to operating upon the uncomplicated disease. For it is to a very

considerable degree in the complications and degenerations of fibroids of the uterus that we have our serious menance to life.

My excuse for writing this paper, and reporting the cases which I wish to bring to your attention, is that in a somewhat exhaustive perusal of the great amount of literature upon this subject, one is struck by the paucity of reports of cases which by reason of the sudden or serious character of the complicating conditions require careful and, if possible, exact diagnosis and immediate operation, and belong to the class of urgent, or to use a stronger term, emergency surgery. According to Noble, in his study of 2274 cases, complications and degenerations existed in 68 per cent. of the number, leaving only 32 per cent. of uncomplicated cases. Those of other authors, as well as individual observations in our everyday work at the operating table, tend to confirm this high relation of complicated to uncomplicated cases, and when we consider further that later on many of the uncomplicated cases will take on complications and degenerations, and be lined up on the dark side of the history of uterine fibroids, we are not only impressed by the serious aspect of the disease, but that in this great percentage of complicated cases there must be some where the complication constitutes a grave, serious, and *sudden* menace to life, and unless met by thorough and immediate surgical relief, will go on to the death of the patient in a relatively short space of time. It is this class of cases that I will have to do with rather than that great class of complicated fibroids which require operation, but where it can be done at the election of the surgeon or the patient; or that class where operation is done simply to forestall future trouble.

The following case represents perhaps the most serious and urgent type seen in the history of uterine myomata.

Mrs. H. (Ref. by Dr. Jacobus, Millbrook, N. Y.) Married; age forty-five; a strong, vigorous woman, full-blooded, and so far as she knew, in perfect health. Mother of one child, twelve years of age. Menstrual history regular and normal until two years ago when it became more frequent, prolonged, and somewhat excessive, and as usual with the laity was considered to be due to the onset of the menopause. Upon the morning of August 8, 1909, while in her usual robust health, and totally unconscious of any impending disaster, she was attending the morning service at church when she became faint, nauseated, and developed severe pain in the lower part of abdomen, and had to be assisted from the church and to her home. She was seen at

about 12 M. by her physician. Her condition then was marked by severe abdominal pain and tenderness, persistent nausea and vomiting, rapid pulse rate, subnormal temperature, pale face and mucous membranes, sighing respiration and great restlessness, which taken into consideration with history of irregular menstruation, led to a diagnosis of ruptured ectopic gestation, with severe hemorrhage. The patient was treated by rest, elevation of the foot of bed, ice-bags to lower abdomen, morphine, adrenalin, etc., with the hope of quelling the hemorrhage and overcoming the shock, until about 7 P. M., of the same day, when by reason of no apparent rally, and evidences of continued hemorrhage as shown by increasing paleness of mucous membranes and skin, rapid feeble pulse, etc., I was called to see her in consultation.

The patient was in such desperate condition when seen, which was about eight hours from the onset of trouble, that it was impossible to make a satisfactory examination, but that a hemorrhage of a severe grade existed in the abdomen and pelvis, was evident from the history of the case, her symptoms and evidences of fluctuation in the flanks, and a doughy feel in the culdesac, and while making the vaginal examination one could indistinctly feel some small uterine fibroids, although the abdomen was too tense and tender for any satisfactory bimanual examination. Patient was prepared for immediate operation at her home, the condition being too serious to warrant any delay or removal to a hospital. Intravenous and subcutaneous salines were administered during the course of operation. Trendelenburg position. Incision revealed abdomen partly filled with blood. Multiple subperitoneal and interstitial uterine fibroids of small size—none larger than a hen's egg—and the source of the hemorrhage was found to be a ruptured artery which coursed over the summit of the largest fibroid. This vessel was still bleeding at the time of operation. Artery ligated, and as the patient had rallied some from the salines administered, a radical supravaginal hysteromyomectomy was speedily performed. She made an uneventful recovery.

This case illustrates a type of severe and serious complication which could hardly be anticipated and necessitates speedy operation in order to save life. I have scarcely a doubt but that the ruptured artery had not bled continuously during the eight hours intervening between the onset of trouble and the operation, else the patient would have succumbed from hemorrhage,

but that it was bleeding at the time of operation was evidence of how easily it could reopen and continue the hemorrhage, probably due to the well-known early arterial degeneration and sclerosis in the vessels of uterine fibroids.

While it is not my intention to deal in this paper with the exhaustive subject of uterine fibroids complicating pregnancy, I shall report the following case as depicting a condition requiring speedy operative intervention to save life.

Mrs. R. (Ref. by Dr. Goodell, Rhinebeck, N. Y.) Age, thirty-one. Married. Patient had severe neurasthenia eight years ago, which was fully recovered from. During that time there had been some uterine disease, exactly of what character is not known. For past three years health had been good, menstruation regular, twenty-eight-day type, and normal in amount. The *last* menstrual period occurred on October 7, 1907. Was married seven days later, October 14, 1907. In about three weeks patient began to have morning nausea and vomiting, increased development of breasts, darkening of areola, etc., and of course suspected she was pregnant. Everything proceeded smoothly until December 25, 1907, when she began to have sharp intermittent pain in the left iliac region, which was increased by exercise or the erect position. Day by day the pain increased in severity, gradually extending over the entire lower abdomen, pelvis and back. It lost its intermittent character and became continuous and agonizing, so that anodynes in considerable quantity were required to produce sleep at night—and indeed were required throughout the day. Persistent and uncontrollable vomiting developed, associated with rapid pulse rate, and a temperature varying from 99° to 102° F. Patient was referred to me for examination, and, if necessary, operation. January 22, 1908, exhausted and shrunken from pain, vomiting, fever and inability to sleep, her condition seemed one of extremis. Examination revealed uterus enlarged to above pubis, and there seemed to be a large hard mass posterior, and to each side of uterus. The desperate condition of patient and the great amount of abdominal tenderness upon bimanual examination precluded the making of a satisfactory examination. But it was believed to be a pelvic tumor complicating pregnancy and incarcerating the uterus. A moderate doubt as to the pregnancy being intra- or extrauterine existed, as it was quite impossible to accurately differentiate the organs. Immediate laparotomy performed. Uterus found to be pregnant and enlarged to size of a three months'

gestation. It was found to be incarcerated and held down into the pelvis by a subperitoneal fibroid, which had sprung from the anterior surface of uterus, 1 1/2 inches from fundus. This fibroid resembled a sausage, and was 5 1/2 inches in length and had a diameter of 3 inches, and was attached to the anterior surface of uterus by a pedicle about 3/4 inch in diameter and 4 inches long. This pedicle had permitted the fibroid to migrate to the posterior surface of the uterus, and when seen at operation it was lying transversely across the pelvic cavity, locked under the sacral promontory, and held in that position by an imbedded subperitoneal fibroid, about the size of a hen's egg, situated upon the posterior surface of the uterus, just above the internal os. The long pedicle of the fibroid which originated upon the anterior surface of the uterus was holding down the fundus and had imbedded itself in a distinct groove. Myomectomy was performed, both the anterior and the posterior fibroids were removed, and the wounds in the uterus carefully sutured. The abdomen was closed. Patient rallied nicely. Morphine was given to prevent uterine contractions, and she did not miscarry but made an uneventful recovery, and at the expiration of pregnancy, after an uneventful labor, she was delivered of a perfectly normal living child.

It is a well-known fact that subperitoneal fibroids originating from the supravaginal portion of uterus do not usually give rise to serious complications during pregnancy, and ordinarily adopt themselves to the changed conditions, but here we have the unusual condition of a sausage-shaped tumor, which by reason of a long pedicle had migrated and locked itself under another tumor upon the posterior surface of the uterus and under the sacral promontory, thereby causing impaction and incarceration of the growing pergnant uterus.

Norris (Kelley and Noble's Gynecology, Vol. II, page 110) reports three cases of posterior subperitoneal tumors causing impaction and incarceration of uterus, by becoming locked and adherent under sacral promontory. In all three cases myomectomy brought the case to a successful termination without the interruption of pregnancy. One could readily imagine, that seen early in pregnancy, such a case might be relieved, and he impaction overcome by bimanual manipulation and forcible replacement. But when seen late, and after impaction has taken place, and the rapid growth of both uterus and tumor are threatening the life of mother and fetus, one is impressed

that the shortest and safest route to a successful issue is through a myomectomy which is performed skillfully, quickly and without undue exposure of uterus or abdominal organs. And though making this statement I am thoroughly a believer in the fact that myomectomy upon the pregnant uterus has a very limited field of usefulness, and should never be performed except in the unusual and life threatening conditions which render such operative procedure obligatory. When performed the operation should be limited to the tumors which are actually at fault, and no attempt made to rid the uterus of other fibroids, which for the time being are innocent.

One of my early experiences in abdominal and pelvic surgery was the case of Mrs. G., a type of case very familiar to you all, and yet one that, unless met by speedy and proper surgical relief, may soon terminate fatally. This patient was referred by Dr. Mackenzie of Millbrook, N. Y. Age thirty-eight. Married. History of prolonged and excessive menstruation for past year, but otherwise health good. Had a ruddy face and was able to do hard and laborious work. She was suddenly taken with a severe uterine hemorrhage, and passed—by actual measurement—about three pints of partially clotted blood. Hemorrhage continued in milder form for the succeeding days. Later evidence of a severe septic condition appeared—chills, high fever, sweating and gradual onset of stupor—the result of exhaustion from hemorrhage and sepsis. When seen in consultation four days from the onset of trouble, the patient was *in extremis*, with pulse rate almost imperceptible and ranging from 140 to 160. Color of face almost like marble in its paleness. A hasty examination revealed a sloughing fibroid, about the size of a fetal head, which had been extruded into the vagina, and its circulation completely shut off by torsion of the pedicle, with resulting gangrene of tumor. Tumor was very readily removed, and without an anesthetic, as patient was practically beyond any keen perception of pain. Salines, intravenous and subcutaneous, and the various postural, medicinal, and dietetic measures, used under such circumstances of anemia and sepsis, were carried out, and she made a good recovery and is strong and robust at the present time.

This type of case is well-known and requires no especial notice before this organization, and when recognized early should seldom cause sacrifice of life.

Somewhat allied to the last case, though vastly more difficult

to diagnose and carrying a greater risk to life, are those rare cases of suppuration of subperitoneal, interstitial, or intraligamentary fibroids. The following case represents a fairly typical instance of suppuration in an interstitial fibroid, with its difficulties of diagnosis and urgent need for operative intervention.

Mrs. S. J. V. Age sixty. (Ref. by Dr. Howell White, Fishkill, N. Y.) Patient had always been a frail, weak woman, and throughout life had been subject to stomach symptoms and constipation, with flatulency, distention, etc. Menstrual life somewhat irregular, an occasional intermenstrual period, and for years prior to menopause, which occurred at the age of fifty, somewhat profuse. Mother of three children and the labors had been uneventful. November 20, 1910, patient noticed a hard tumor in hypogastric region, just palpable above the pubes, and as she was an exceedingly thin person, with lax abdominal walls, the palpation and recognition of the tumor by the patient was very easy. At the time the tumor was discovered, the patient began to feel badly and have chills at irregular intervals, followed by fever of a varying intensity, profuse sweating, loss of flesh and pain in lower abdomen and pelvis. With the onset of these symptoms there was a very rapid growth of the tumor and when seen in consultation December 1, 1910, it reached to the umbilicus. Thus in a period of ten days, during which there had been severe symptoms of a septic character, the tumor had enlarged from a point just palpable above the pubes to the umbilicus. It was smooth in outline, had a rather soft feel, like a pregnant uterus, and its greatest width was at the top or umbilical portion. Abdomen moderately tender, vaginal and bimanual examination determined that the tumor was uterine in character. Blood examination revealed moderately increased leukocytosis and a differential count showed marked increase in polynuclear cells. Patient was emaciated, shrunken, and vomited occasionally, and had the appearance of one in marked sepsis. A diagnosis of probable suppurating uterine myoma was made from the history of the case; that is, the past menstrual history, the present condition of evident septic infection, and especially the rapid growth of the tumor, coupled with its rather soft and semifluctuating feel upon palpation and bimanual examination. Immediate operation disclosed a large nonadherent uterus, the size of a six months' pregnancy, and of exactly that shape. With the abdomen open, distinct fluctuation in tumor could be obtained. A supravaginal hysterectomy

was easily performed without rupturing the abscess, care being exercised by not using any forceps in delivering the tumor through the wound. After its removal, and at the completion of the operation, the tumor was opened and found to be a great abscess located in the posterior wall of uterus, and containing 2000 c.c. of pus, which had resulted from the suppuration of a uterine fibroid. The walls of this great abscess cavity were thinned out to about the thickness of thin blotting paper, and it was very apparent to those present that a rupture of the abscess could easily have occurred prior to operation and precipitated a fatal outcome, and that its removal without rupture had largely been providential, and partially as a result of the provisional diagnosis of intrauterine suppuration.

When one stops to consider this case, rather rare and unusual as it is, he is impressed with the fact that a diagnosis prior to operation is not so difficult, if, previous to onset of suppuration, a uterine tumor was known to exist. And this knowledge, coupled with the rapid increase in size of tumor, the marked evidences of septic infection, chills, fever, sweating, leucocytosis, etc., should lead one to an early and fairly certain diagnosis, except in those cases where by reason of a great amount of abdominal fat, examination is rendered very difficult and uncertain. But even in these cases one who is alive to the many and varied complications and degenerations of fibroid tumors of the uterus will not often be misled.

Why tumors of this character undergo such suppurative changes is beyond the scope of this paper, and we can only infer that an infection from the uterine cavity, a thrombophlebitis, or both, may have been the causative factor in interfering with the circulation. It is to be hoped that such original lines of investigation as are being carried on by Sampson (*Surg., Gyn. and Obs.*, Vol. IV, No. 3) and others will give us increased knowledge of the blood supply of these tumors, and hence greater ability to determine the reason for some of their complications, especially those of a circulatory character.

The following case represents a condition somewhat similar to the last case, although not advanced to so great a degree of infection.

Mrs. H. Married. Age forty-nine. (Ref. by Dr. Jacobus, Millbrook, N. Y.) Mother of two children, the younger of which is eighteen years of age. Has had perfect health throughout life. Menses regular (twenty-eight day type), seldom painful,

but for the past several years profuse and prolonged. Had no knowledge or suspicion of having a pelvic tumor and no examination of pelvic organs had been made. By reason of absence of menstrual periods of October and November, 1911, patient became alarmed lest she was pregnant, and resorted to remedial measures of a medicinal character, to bring on the menstrual flow. December 22, 1911, was taken with severe pain in the lower abdomen and pelvis, and as it was intermittent in character and there soon developed a profuse flow of dark clotted blood from the vagina, she believed that her remedies had been effectual and that a miscarriage was taking place. The pain and hemorrhage increased in severity day by day—anodynes were required almost constantly. When seen in consultation Dec. 29, 1911, seven days from the onset, she was anemic and exhausted from pain and excessive hemorrhage—chills, fever and sweating were prominent symptoms, and patient looked and acted septic to the extreme—abdomen, especiallv below the umbilicus, rigid, distended and extremely sensitive. Notwithstanding the extreme tenderness a large hard mass, about the size of a cocoanut, could be felt to the left of the uterus, and attached to it, and the attending physician was satisfied that this mass had *rapidly increased in size during the past week.* A moderate amount of peritoneal fluid was demonstrable by dullness in each flank which disappeared upon changing patient to the side. Peritonitis of a marked degree was present, and that some serious intraabdominal catastrophe had occurred was evident. The exact nature of the lesion was not positive, but it seemed to rest between a tumor with strangulation, or a ruptured ectopic gestation, complicating a condition of uterine fibromata, for it seemd quite certain that the tumor to the left of the uterus was a fibroid. Ruptured ectopic gestation was considered by reason of the menstrual history, sudden onset of pain, uterine hemorrhage, etc. An immediate laparotomy was performed. Peritoneal cavity contained a large amount of blood stained serous fluid. Mild grade of peritonitis, affecting the pelvic and infraumbilical portion of peritoneum, was found to be present. The cause of the trouble was found to be an embedded subperitoneal fibroid, the size of a small cocoanut, which had become necrotic, and was rapidly softening and infecting the surrounding area. The fact that the tumor was not pedunculated, but was embedded into the muscularis, renders the cause of this serious complication quite

uncertain, although it is reasonably probable that the circulation to the tumor may have been seriously impaired by the action of the remedies taken by the patient, under the mistaken idea that she was pregnant, to produce abortion, with resulting thrombophlebitis in the vessels of the tumor, and with secondary microbic invasion from uterine cavity. A hysteromyomectomy was performed and patient made an uneventful recovery.

When one considers the history of this case, the profuse and prolonged menstruation for several years past, sudden development of severe and persistent pain, onset of uterine hemorrhage, *rapid increase in size of a palpable uterine tumor*, and associated chills, fever and increased pulse rate, with a developing peritonitis, one is impressed by the fact that a correct diagnosis should have been made prior to operation.

In reporting these cases I am quite conscious that I have added nothing new and original to the knowledge of this well-known and thoroughly studied disease, and that the members of this Association are thoroughly competent to diagnose and treat with exactness these emergency complications of uterine fibroids, I am assured. But with the great advance that has been made during the past two decades in the science and art of surgery, and the relative safety of present day operative methods of treatment, I am convinced that we should impress upon the profession at large that a great percentage of uterine fibroids degenerate or become complicated sooner or later, that usually the operation for the cure of that condition can be done at such time as surgeon and patient elect, but that a small percentage of complications are of such a serious and urgent character as to require immediate operation in order to save life. To give that early operative relief one must be thoroughly versed in interpreting symptoms, both objective and subjective, in association with these cases, in order to make accurate diagnosis and institute proper surgical treatment.

295 Mill Street.

SOME OF THE REASONS FOR ADVISING EARLY OPERATIONS FOR FIBROID TUMORS OF THE UTERUS.

BY
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In considering this subject one ought to take into account all of the complications arising in the life history of these tumors, which extends over a long period of time, usually from ten to fifteen or even twenty years, also the suffering and the semi-invalidism entailed. To do so, however, would be impossible in the short time allowed. Therefore, only a few of the more acute complications and conditions will be considered, the others will only be mentioned, but the writer hopes to evoke a discussion of the subject, for that is the object of all our work here, to exchange views and thereby arrive at the facts.

The profession to-day is not united as to the correct advice to give these fibroid patients. This is not to be marveled at, when we take into consideration the long clinical history of the natural life of a fibroid, extending as it does over so many years, in many cases with comparative comfort of the individual, as well as the traditions and the teaching regarding the treatment by the older writers, which until recently was palliative only.

All physicians know that comparatively little can be accomplished by medicinal and hygienic management, except to render temporary relief. For this reason we see these cases going from one physician to another, not infrequently taking treatment for months together, then changing to another until they have gone the rounds of five or six or more in the vain search for relief, but always with the same result, hope deferred. Later there develop threatening symptoms demanding immediate attention, if the life of the patient is to be saved.

It is not difficult now for the physician or the gynecologist to decide what that particular patient should be advised to do. She must be operated and under the most favorable conditions. But in the great majority of the cases, however, the symptoms are not so severe nor threatening, and the patient can be made

fairly comfortable for an indefinite time by palliative means. In such cases should the tumor be removed, or should it be left alone until serious symptoms develop? This is one of the most important problems of the day for the gynecologist to solve. I believe that this question can be solved in time, by carefully studying the life history of this disease. By doing this and making a record of the complications which frequently arise in or about these tumors and are clearly caused by their presence, I do not mean one examination or treatment for a year or two, or a report from one or two doctors, who treated the case early in the history of the disease. They always report that the patient is fairly comfortable, which is correct. What I mean, is to follow the case from the first physician's report to the end of the disease, then you will have a fair and correct picture from which to base an opinion.

In this way the profession can be given the facts about the fibroid disease and the complications and dangers which may arise, just as they have in appendicitis, gall-bladder disease, and various other intraabdominal affections, regarding which the profession has changed its views and treatment in the past few years. I am glad to note that the profession is coming to realize more and more the fact that there are real dangers to the patient who is a subject of fibroid disease, even though the case has pursued a mild course for years.

What are some of these dangers? They are many and varied, including:

First, secondary changes in the tumor (cancer).

Second, heart symptoms.

Third, pyosalpinx and suppurating ovary.

Fourth, ovarian hematoma, with infection of its contents.

Fifth, torsion of the uterus.

These call for early relief, but there are many others not so urgent, which I shall mention later.

First.—In speaking of secondary changes, I will refer only to cancer, as it is the most urgent of the many secondary changes occurring in these tumors. Malignant disease is much more frequent than was generally believed a few years ago even by the specialist. Taking a large series of cases numbering more than 5000 operated by different surgeons, cancer was found to be present in from 3 per cent. to 8 per cent. of all the tumors removed. The writer is of the opinion, judging from his own experience, that the latter figure is more nearly correct. With

these facts before us, does it not point a way for prevention of that dread and deadly complication?

Second.—The frequent association of heart disturbances in cases of long-standing uterine fibroids has attracted the attention of the profession and especially of the operators, for years. The number of cases showing heart disturbances is very large, amounting to 40 per cent. in late cases. This is out of all proportion as compared with a like number of surgical risks in any other disease excepting goiter. This condition is too constant to be a mere coincident. The exact relation between the two has not been determined. It will require patient and careful effort to do so, but some one will accomplish it. Whether the heart disturbances are due to the chronic anemia from the long-continued loss of blood, or some toxic influence caused by the tumor, or some associated product of the same character that caused the fibroid disease, is all speculation, yet the fact remains, however, that we are continually meeting with these cases. They are factors not to be ignored or cosidered as trivial, but on the contrary they are to be regarded a very serious handicap to the patient at the time of the operation. It has been shown by Baldy's report in the records of the Gynecian Hospital in Philadelphia, as well as the experience of a large number of other careful observers that they are the direct cause of an increased mortality after operations.

Third.—Pyosalpinx with suppurating ovary is a frequent complication in long-standing fibroid subjects especially in married women. While this condition is not so frequent in the higher walks of life, yet it is a factor that one must always reckon with. In public hospital work in which the cases come from the poor and less informed, the presence of a suppurating tube and a large suppurating ovary is very frequent, in the experience of the writer reaching as high as 15 per cent. of all cases that apply for relief. It is perfectly easy for one to demonstrate by the clinical history that the pyosalpinx and suppurating ovary are a recent condition, commencing at a certain definite time and pursuing the usual course of the disease as seen in patients who are not the subjects of fibroid disease. That the presence of a suppurating tube or ovary is a serious and dangerous complication, adding to the mortality after the operation which these patients are now compelled to submit, is a fact that no operator will dispute, therefore, we

must always reckon with these as a serious complication that may come to many of the fibroid cases.

Fourth.—Ovarian hematoma with infection of its contents is a serious and dangerous condition not infrequently encountered. The writer has met with this complication in quite a number of cases. He has observed it only where the fibroid tumor had been known to exist for many years, and the tumor occupied the pelvic cavity as well as extended well into the abdomen. Only one ovary, as a rule, is involved and usually contains from 4 to 6 ounces of old blood clot. All of these cases give a history of having had several attacks of pelvic peritonitis. The fibroid fills the pelvic cavity full and under this is located the involved ovary. The condition upon examination is not unlike a fibroid complicated by pus tubes, so far as all the physical signs are concerned. This complication has been met with almost exclusively in the unmarried, in whom it was perfectly easy to exclude infection, *via* the vagina. The writer believes that the ovary becomes imprisoned in the pelvis during the progress of the growth of the fibroid, and because of the pressure upon the imprisoned ovary the bleeding takes place into the ovary during each menstrual period, extending over several months, sometimes as many as fifteen. The ovary thus distended by blood and lying just in contact with the rectum, the infection takes place by the colon bacillus finding its way into the blood clot. By careful examination the colon bacillus was found to be the cause of infection in all of these cases.

Fifth.—Torsion of the pedicle of fibroid tumors is not an infrequent accident and calls for early operative interference, yet the symptoms are not so urgent as those caused by torsion of the uterus, which serves as a pedicle for the tumor in some of these cases. When this occurs the strangulation of the tumor is complete. While this is not a frequent accident, it is of such a grave and dangerous condition that it is of vital clinical importance and well worthy of mention in this connection. In each instance in the writer's experience the fibroid was about the size of a four or five months' pregnant uterus, and attached to the upper segment of that organ. In the three cases in which this condition was encountered the patient had known of the existence of the tumor for several years, but as the symptoms were not severe, they had been advised by their physician not to do anything until the tumor caused severe symptoms. The clinical history of the acute attack in each

case was so like that of a ruptured tubal pregnancy, that the family physician had given that as his diagnosis, in two instances believing that it was associated with the fibroid tumor. The torsion was so pronounced that in each case the entire tumor was black in color, and in two cases the strangulation was so firm that numerous hemorrhagic infarct were produced throughout the tumor mass. These cases certainly developed severe symptoms just as the patient had been advised to wait for before having the tumor removed.

The acute complications enumerated above are by no means all that are likely to occur in any given case. There yet remains to be considered necrosis, suppuration, edema, calcareous degeneration, cystic degeneration and intraligamentous development which can be easily and safely dealt with early in its history; but is complicated, difficult, and dangerous late in the disease. Ovarian cyst and pregnancy are not infrequent complications, and are always a matter of serious concern. The tumor may give no serious trouble before pregnancy supervenes and may have advanced to two or three months, when the symptoms suddenly become very acute, demanding immediate relief. Frequent attacks of pelvic inflammation, anemia due to the great loss of blood at the menstrual period, pressure symptoms interfering with the function of the bowel and bladder are also likely. The secondary effect upon the kidneys due to pressure upon the ureter is not an infrequent condition. Any of these lower the vitality of the patient, and entail additional risk to that which the patient has incurred on account of prejudice of the profession and through them the patient and her friends, to early operations. We could mention many other reasons for advising early operations but enough has been said for me to ask: What are we going to advise our patient? She comes to us knowing that she has a tumor. She can get along fairly comfortably, but she came to learn whether or not it is safe for her to go along with her tumor. She wants advice whether it would be better to have the tumor removed now while she is in good condition, and the risk accordingly small, or whether she had better wait and see whether or not several symptoms develop. Your decision is momentous to her. One cannot investigate this subject without realizing the fact that disabling and fatal complications, directly due to these tumors or associated with them, occur with alarming frequency, and one is again and again, asking himself if he is right. Is the profession

right in withholding operation so long in a condition fraught with so much danger from this delay? It is conceded by all that cases in which the tumor is causing symptoms which it is plainly evident cannot be corrected in any other way, except by removal of the growth, should be recommended for operation. But it is the larger number of cases which have not progressed so far that we are discussing now. The writer is of the opinion that after the usual palliative treatments have been given a fair trial for two or three months, if the symptoms subside and the patient is relieved and is apparently a well woman, the case is not one for immediate operation, but should be carefully watched. But on the contrary, if the symptoms continue after this preliminary treatment, and after making certain that they are due to the activity of the tumor; by which I do not mean that the tumor is enlarging rapidly, or that secondary changes are taking place in it; but in the sense that it has not become quiescent, non-active, clinically well; but is pursuing the usual course in these cases persistently progressive. In the writer's experience a large proportion of this class of cases, probably most of them, finally pass into a condition of chronic suffering and invalidism. Because of the fact that the tumor itself is a continual source of disturbance, even though it is of small dimensions, and the patient subject always to the dangers of the various complications enumerated; therefore, we should not wait until severe symptoms develop, but recommend an operation in the near future.

628 Elm Street.

DISCUSSION ON THE PAPERS OF DRS. SADLIER AND HALL.

Dr. Herman E. Hayd, Buffalo.—I have had an interesting experience which accentuates the importance of Dr. Sadlier's paper, and for that reason I will briefly report it.

I operated in May on a woman twenty-six years of age who was seven and a half months pregnant. Seven days before I saw her, her husband came home drunk and kicked her in the right side. She had complained of a great deal of pain during the previous two or three days, so that it was necessary for her to remain in bed. She could not get up nor walk on account of acute suffering. She had a temperature of one degree at night. I was called a week after the accident by her family physician and upon examination found a mass in the right side, about the size of one's fist, which was evidently attached to the uterus. This mass was exquisitely tender. I was satisfied from the history of the case that it was probably a suppurating fibroid, as the pain did not agree with the usual syndrome of appendi-

citis, and for that reason I advised operation. She was removed to the hospital, and an incision was made over the appendical site, and a tumor about the size of a good big orange was delivered. I felt somewhat distressed after delivering this tumor, which was perfectly smooth and clean, to think this woman was subjected to operation, when, in all probability, no obstruction would have resulted in her future delivery. However, after the wound was sewed up and the tumor was bisected, the center contained about a teaspoonful of pus, so that it was a case of suppurating fibroid with all of its possible dangers and complications.

Another especially interesting feature was, the pedicle was small, only about the thickness of my finger. I deperitonized—separated the peritoneum—pushed it back, tied off the stump, but it kept on oozing. I took a round needle and carefully stitched the surface together, but where the needle made its entrance and exit it continued to ooze and ooze, that I was afraid to close the abdominal cavity. I tried pressure, and waited for a few minutes, and finally in my distress I simply clamped off the oozing surface with a bent broad ligament forceps. I let the forceps hang from the lower end of the wound and at the end of twenty-four hours I removed them and the pregnancy was in no way interfered with, and seven weeks after this operation the woman was delivered of a thirteen pound boy. I am satisfied that we can do a great deal of surgery on the uterus if not brutally handled when we have no toxemia, where there is no toxic condition of the blood. All of us know how serious pregnancy is when it is associated with typhoid fever. These women abort very easily and in a very large percentage of the cases. So also with an acute suppurating appendicitis abortion very frequently occurs.

Dr. Edward J. Ill, Newark.—I have reduced the question of fibroids to an arithmetical proposition. It is said that from 3 to 8 per cent. of fibroid tumors develop cancer somewhere in the uterus; therefore every fibroid tumor should be removed. I take exception to this. Cancer of the cervix or body are incidental to fibroids, but fibroids change to cancer rarely. At Johns Hopkins, out of 1300 cases, one fibroid is said to have become cancerous. These patients come for operation because of the symptoms these tumors produce. How many fibroids exist in women, generally? Suppose we take Philadelphia as an example, and I speak of Philadelphia because in my arithmetical problem I had to deal with that City when I looked this matter up. The deaths rate from operation we will say, is as low as 3 per cent. I am presenting the lowest figure only, up to about six years ago. They had operated in Philadelphia on 6000 cases. I had looked up the statistics in various hospitals all over the world, and the number of fibroid tumors found on the postmortem table in general hospitals in women after thirty-five was between 4 and 8 per cent. Supposing we say the average was 6 per cent.

Six per cent. of all women about and near Philadelphia represent about 120,000 women. Philadelphia had operated on 6000 cases. Will you tell me what has become of the 114,000? They have had no symptoms, and they do not see a doctor, and if they had symptoms and did see a doctor, they would not have escaped operation. If we subject those 114,000 women to operation, as my friend, Dr. Hall advises, you would kill 3420. When you remove fibroid tumors for fear that cancer is going to develop, then you must consider them in the light of operative cases. If one fibroid in 1300 cases degenerates into cancer, then in 114,000 you would have eighty-seven cases turn cancerous. But to save these eighty-seven cases, you have killed 3 per cent. of the 114,000, or 3420. I leave any further deduction to you.

Dr. Hall (closing the discussion).—I want to say a word or two in answer to Dr. Ill. He did not take the right cue. Dr. Ill would operate on the very cases I would operate upon. I said that if you treated these cases within a reasonable time, say two or three months, and they continued with symptoms and were not relieved, then they were cases for operation. I did not say that a large number went on without symptoms. Those who were put on the waiting list had tumors present. The day is coming when fibroid tumors will be operated upon early, and when that is done we will not see so many complications. Cancer comes in tumors that have been delayed for five and ten years without operation. These are the ones in which you get cancer in the degenerated tumor.

POTENTIAL CANCER OF THE BREAST.

BY

MILES F. PORTER, M. A., M. D.,

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(With Three Illustrations.)

In a paper entitled "The Rôle of Surgery in Preventive Medicine",(1) read at the St. Louis meeting of the A. M. A., June, 1910, I said:

"I have seen sarcoma engrafted on a fatty tumor of the elbow in an elderly woman. The tumor was situated on the flexor side of the joint where it was many times daily subjected to pressure. What surgeon of experience but has seen many cases of carcinoma or sarcoma commence in warts, moles, eczematous patches and fissures? It is my firm conviction that by timely surgery cancer could be prevented in a large number of cases. Most of the cases of cancer cured by surgery are those which are cured before they come, plus those which are cured before the diagnosis can be made save by the microscope; and herein lies the cause of the cancer quack's continued popularity: "Didn't he cure Belinda Brown of a cancer which commenced just like that one that killed Sarah Smith?" The point which I wish to make is this: that by removing causes of irritation in the shape of gastric ulcers, lacerated cervices, phimosis, gallstones, kidney-stones, warts, moles and other nonmalignant tumors and causes of irritation, surgery can prevent more deaths from cancer than it can by the removal of cancerous conditions after such a diagnosis is possible. I venture to suggest here an addition to our cancer vocabulary, viz., potential cancer."

Ljunggren(2) in 1898 showed by experiments that epithelial cells could be preserved in ascitic fluid, and that these cells, transplanted after being preserved as long as three months, not only grew but penetrated granulation tissue after the manner of carcinoma.

The prevailing view as to the origin of cancers is that they develop from rests which have been detached in process of development or as a result of inflammatory changes or abnormal involution.

That irritation of glandular epithelium by microorganisms and particular protozoa will excite it to multiply is well known.

It is a matter of common observation that carcinoma is much more prone to arise in organs, the seat of chronic inflammatory changes than in those thoroughly healthy.

So far as our knowledge goes at the present time, there is no such thing as a cancer cell that can be recognized microscopically. A group of epithelial cells that are normal and well behaved to-day may to-morrow take on cancerous activity. And especially is this malignant change apt to occur in cells that have been detached by inflammatory or other pathologic processes.

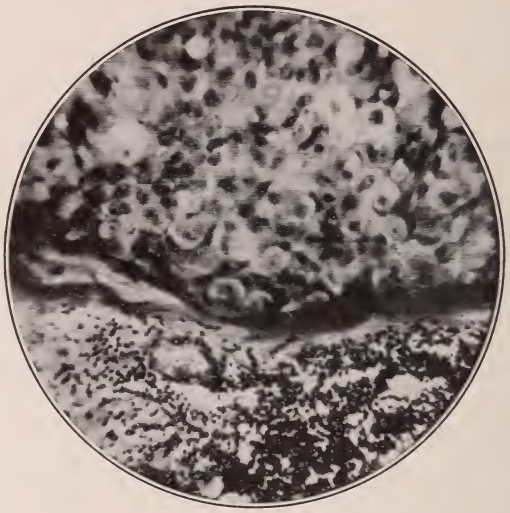

FIG. 1.—Duct cancer with inflammation. (Specimen from Case I, Miss K.; 1/8 obj. Rhamy.) Note the cancer area in the upper left side of the picture separated from the inflammatory area below and to the right by a broad band of fibrous tissue.

Tissue cells remind me of certain people—when at home under the restraining influence of family and friends they are models in deportment, but let them get away from home and subject them to unusual excitement and they "go bad."

According to Sutton(3) it is impossible to decide from a microscopic examination whether a given tumor should be called a cancer or an adenoma.

Rodman(4) says that papillary cyst adenomas of the breast should be looked upon from the beginning as potentially malignant.

The investigations of Willson and MacCarty at the Mayo clinic show that cancer of the gall tracts and cancer of the stomach are frequently engrafted upon old inflammatory lesions.

Surgeons not infrequently see cases of breast trouble in which the clinical findings are decidedly in favor of a diagnosis of an inflammatory lesion but which, on microscopic examination, shows carcinoma with inflammation.

Case I.—Miss K., æt. forty-eight, school-teacher, presented herself with a small ill defined lump in her left breast, which was painful and tender. The breast was removed, and after examining the sectioned lump with the unaided eye, it was handed to the pathologist to be immediately sectioned and reported upon, as is my invariable rule in breast tumors. So sure was I that the trouble was inflammatory that I proceeded to close the wound and had the work nearly done when the report came in—"malignant," and I had to do a radical operation.

The fact is that in this case we had associated two pathologic processes, *i.e.*, inflammation and carcinoma (Fig. 1). Exactly what the etiologic relationship of the two processes in this case it was impossible to say.

In some cases of cancer of the breast there is no tumor, and the only symptom present is a discharge of fluid which may be either bloody or serous.

Case II.—Mrs. L., wife of a doctor, æt. thirty-nine, mother of three children, presented herself with a breast that had been leaking a bloody fluid for some weeks. There was no tumor and no pain. The breast was removed, and on microscopic section adenocarcinoma was found (Fig. 2).

Case III.—Mrs. P., æt. fifty-five, also the wife of a doctor, mother of seven children, presented herself with a breast leaking a bloody fluid. She had a small abscess in this breast twenty-eight years before, which had healed promptly after it was opened. There was neither pain nor tumor, although the breast was slightly tender. The breast was removed, and on section nothing but inflammatory trouble was found.

On the other hand, a breast may be the seat of a tumor, and leak, and present a retracted nipple and yet not be carcinomatous.

Case IV.—Mrs. R., married, multipara, æt. thirty-five. Breast the seat of a well-defined lump. The nipple was retracted and leaking a serous fluid. The areola was eczematous. An examination of the specimen after removal showed the trouble to be inflammatory.

Youth is not exempt from carcinoma, particularly in the presence of trauma, bacteria or other agencies known to act as excitants to cell activity.

CASE V.—Miss B.; æt. seventeen, presented herself with a small lump in her breast which was noticed immediately after an injury received two years before.

Examination after removal showed the growth to be "commencing adenocarcinoma." In his report on the specimen the

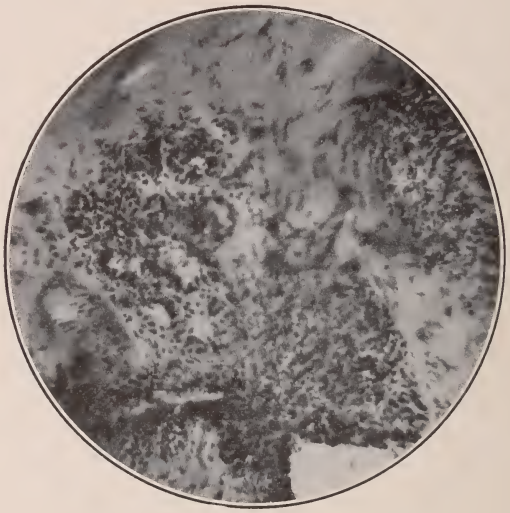

FIG. 2.—Duct cancer with inflammation. (Case II, Mrs. L.; 1/5 obj. Rhamy.) Note the cancer areas surrounded by inflammatory products.

pathologist (Dr. Rhamy) further remarked that it looked as though "it might have been formerly a canalicular adenofibroma" (Fig. 3).

In a paper published when this paper was nearly finished Bloodgood, speaking of bone sarcoma, says:

"Many investigators, both clinical and experimental, have been interested the last few years in the possibility of a precancerous lesion; by this is meant a visible, palpable lesion of a benign nature, either a benign tumor or an inflammatory focus. In this benign lesion, experience teaches, there is a possibility of a malignant degeneration. Apparently all agree that cancer usually begins in such a lesion, rarely, if ever, in normal epidermis or mucous membrane. In most instances the benign lesion is recognizable and always easily removed. Why not, therefore,

be on the lookout for such lesions? If these were removed, might we not expect a great decrease in the number of cancers of the skin and mucous membrane?"

What Bloodgood says of bone is equally true of all other tissues and organs of the body, including the breast.

I want to emphasize the fact, however, that in case of the breast the lesion is not always palpable. (Cases II and III reported above.)

Tumor formation is a late manifestation of cancer, albeit in many situations the earliest that can be appreciated. In the

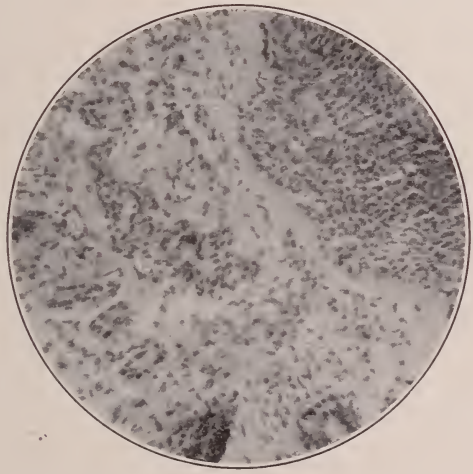

FIG. 3.—(Case V, Miss B.; 1/5 obj. Rhamy.) Duct cancer with chronic inflammatory connective tissue hyperplasia. Note the cancer cells filling and dilating a duct in the upper central portion of the picture. In the lower two-thirds of the picture are several normal ducts surrounded by hyperplastic connective tissue.

breast, however, the first sign of cancer may be an abnormal secretion or a retraction of the nipple.

My object in writing this paper is threefold: 1. To show that benign tumors and such pathologic changes in the breast as result from chronic inflammation, abnormal involution (fibrous and granular hyperplasia with retention cysts), and trauma, are potentially cancerous. 2. That actual cancer as demonstrated by microscopic examinations may be present without palpable tumor formation. 3. That the only way to differentiate between potential cancer and actual cancer is by microscopic examination.

Granting that my object has been achieved then the following conclusions seem inevitable:

1. All potential cancers require excision.
2. All demonstrable cancers require radical removal.

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DISCUSSION.

Dr. Channing W. Barrett, Chicago.—In relation to the subject of Cesarean section for placenta previa it might be well to call attention to some points in the histology and pathology of implantation as they explain the reason for excessive hemorrhage. The Müllerian tract has become divided by specialization of work into ovum-carriyng portions—the tube, cervix and vagina, and the ovum-developing portion, the uterus. When the ovum becomes attached to the tube or cervix it finds these tissues ill prepared to resist the destructive and corroding action of the trophoblastic cells of the embryo and these tissues are invaded so that in case of placenta previa we are dealing not only with early separation but with difficult and destructive separation. Cervical tissue tears instead of dilates and hemorrhage is profuse. Not only must we consider the amount of separation and the degree of laceration, but we must count the element of time important. Dr. Schwarz takes the extreme ground that no case of placenta previa *per se* should receive Cesarean section, but cases are seen in which a labor prolonged by a rigid cervix, undilated soft parts, or a slightly contracted bony pelvis would introduce an element of danger not encountered in cases in which delivery could be accomplished rapidly and easily. Any or all of these difficulties might be overcome by a prolonged labor, but a labor of this kind would mean possible or probable death because of the placenta previa and therefore Cesarean section might be chosen. I believe, however, that Cesarean section for placenta previa is likely to be overdone in the hands of the surgically trained man. I believe that if more of these cases fell into the hands of men obstetrically as well as surgically trained, fewer of them would be dealt with by Cesarean section and more of them would be handled successfully through the natural route. Yet I would emphasize that there seems to be a place, although limited, for Cesarean section in placenta previa.

I wish further to say with reference to packing the vagina and cervix for control of hemorrhage, that oftentimes packing merely prevents hemorrhage from coming to the outer world. A hemorrhage may still be going on in the uterus. Not infre-

quently placenta previa is one of the causes of premature detachment of the placenta and in that case hemorrhage may continue and the uterus dilate in spite of the packing.

Dr. Asa B. Davis. New York.—Accouchment forcé has been tried, and it was the method of delivery before Cesarean section had reached the position which it now holds. Our experience with that method of delivery has been that while the cervix is dilated, more often it is lacerated. We do not resort to dilatation in these cases, to any great extent, as the laceration or traumatism is very severe. There is no doubt about that in our minds. We start the laceration before the child is delivered. In delivering the child in our experience the laceration has extended beyond the point at which we begin to deliver the child, and often it has extended so that large vessels are torn through or rupture of the uterus occurred. In some instances we used to rely upon packing the uterus and packing the lacerations. We can pack these women so that hemorrhage will be checked for possibly an hour. By that time the packing has become wet at the site of the bleeding and ceases to exert pressure. The packing is usually taken out. The hemorrhage goes through the packing that is already in. The packing is taken out and replaced by dry gauze. In a number of cases, the patients have died from hemorrhage and shock. In the cases reported very often we find that the cervix, the pelvic floor and sphincter are lacerated. With our present knowledge we can enter the uterus from above and make a clean cut wound. We know the dimensions of it. We can close it quickly in a clean surgical way, and the cervix is left as it was before we began.

As to the necessity of the practitioners who are isolated and are distant from help, I will say that the means of communication with small hospitals has developed to such an extent that help can be had in the majority of cases, and I believe very thoroughly in cases where we have to deliver rapidly that Cesarean section is the preferable operation, and that abdominal Cesarean section has a decided advantage over the vaginal operation. Through the vagina we can deliver the child quickly, but it is another matter, as I have experienced, to close the wound and secure good coaptation. In subsequent deliveries if we resort to vaginal Cesarean section, those old scars are very much more apt to tear.

Dr. Channing W. Barrett, Chicago.—With reference to the question of colpotomy as a means of diagnosis of extrauterine pregnancy, I must admit that I recognize the difficulty that we may occasionally encounter in making a diagnosis when there is no hematoma present nor any considerable enlargement of the tube, but we should be very cautious in making a colpotomy for diagnosis. There are cases on record in which patients have died suddenly from hemorrhage excited or permitted by vaginal exploration. If this method is chosen for diagnosis the patient should always be ready for immediate celiotomy. We should be very careful to teach men that vaginal puncture is not a safe

means of diagnosing extrauterine pregnancy outside the hospital or without the above preparations.

I cannot look favorably upon vaginal celiotomy as a means of reaching and removing extrauterine pregnancy.

I have made the mistake of operating upon one case for supposed extrauterine pregnancy and found an intrauterine. Briefly a number of diagnoses had been made. I saw her outside the city and without opportunity for further observation which, in doubtful cases, is a great misfortune. Extrauterine pregnancy of three and one-half months was diagnosed. The uterus seemed to be felt running up from the vagina the normal distance and separate from the mass; the normal expansion was observed in this supposed uterus. Celiotomy discovered a normal pregnancy but a very long expanding cervix with a pendulous uterus. Unusual outlines were presented by the presence of twins, this being the third pair of twins of this mother. She went to term without further incident.

Dr. William Seaman Bainbridge, of New York City, said the "dead house" or the cancer hospital is the place to study the end results of the treatment of cancer of the breast. During the past nine years he had seen hundreds of cases, many of which had been variously diagnosed and variously treated before coming to the cancer hospital for operation. Fortunately, many cases are seen early; many more, however, are seen when it is too late for more than palliative surgical intervention.

Inasmuch as every cancer begins as a benign growth, or has its origin in some general or localized metabolic abnormality, too much emphasis could not be placed upon the early removal of "lumps" and "bumps," and upon the correction of all errors of metabolism. It cannot be predicted how soon a benign tumor may become malignant. Retraction of the nipple and secretion are not necessary accompaniments of malignant neoplasms of the breast. He had seen many cases of undoubted cancer of the breast, as witnessed by subsequent microscopic examination as well as by clinical symptoms, in which there was no retraction of the nipple, and no secretion. Too much emphasis, however, must not be laid upon microscopic examination, for some cases may be said to be clinically malignant and seemingly pathologically benign. The converse may also be true. A negative report may be of little value. If one could depend upon the examination of a half dozen or even a dozen slides in making a diagnosis it would be very well; unfortunately, however, it is sometimes necessary to study many more slides before one can definitely determine by this means whether a neoplasm in its early stage is malignant or not. It sometimes occurs that a surgeon, upon clinical evidence, removes a breast, has the pathologist report "no malignancy," demands further examination, and later receives a final verdict of "active malignancy." The speaker has had repeated experience of this kind. In a few instances, some years ago, he had been guided by the negative microscopic rather

than by the clinical picture, leaving a tumor pronounced be nign by the pathologist, only to see the patient die, within a few months, of general carcinosis. The cancer should be cut out —*not cut into*—if a cure is to be expected. In this connection the speaker referred to the statement made by Czerny at a recent International Congress, to the effect that it might be different for others, but for him to cut into a cancer, without immediately removing it, hoping to cure the patient, violates the dictates of his own conscience.

THE SELECTION OF THE ANESTHETIC FOR ABDOMINAL AND PELVIC SURGERY.

BY

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I AM impelled to the presentation of a paper of this character by two motives: The first is to bring out from an authoritative source, such as this body, a practical discussion upon the most important single factor in the average abdominal or pelvic operation. The second is to present my own conclusions based upon a very modest experience but with a hope that the paucity in numbers may be partially compensated for by the fact that each case has been the subject of careful personal observation. The series upon which these conclusions are based runs back only four years, at which time the hospital was completed in which 95 per cent. of my work is done, and because of the compactness of the material and the possibility of observing every patient individually, some ideas concerning anesthesia have been evolved which are assuming the characteristics of a creed.

I may be wrong in stating that two motives only impelled me to present such a paper as the present one, as it is more than likely that there is also a subconscious desire to stamp as altogether wrong the idea that there exists at the present time a universally safe anesthetic or one which under any and all circumstances meets every indication.

The short series of cases which forms the basis of this paper comprises 1120 separate anesthesias, of which 731 were for laparotomies, among which ether was the anesthetic in 582; nitrous oxide and oxygen in 128; local anesthesia in nineteen; chloroform in two.

In attempting to analyze the reason for the selection of the particular anesthetic for the particular patient in this series, some interesting facts were developed.

Local anesthesia by cocain, novocain or quinin and urea hydrobromate, either alone or followed by ether at the appropriate time, was used because the patient was in no condition to tolerate the deliberate use of any general anesthetic. In one instance

local anesthesia was used for an appendectomy solely because the patient desired it. Uncompensated heart lesions, myocarditis, arteriosclerosis with very high blood pressure, profound collapse and advanced sepsis were the usual complications which led to exploration under cocain and the completion of the operation after a few whiffs of ether if necessary. With care the abdominal incision can be made painlessly under skin infiltration with a 1/2 to 1 per cent. solution of cocain or novocain and from 1/10 to 1/4 per cent. for the deeper structures.

There is nothing original in the statement that handling the parietal peritoneum and traction upon any of the mesenteries is painful and ligation of the mesoappendix or broad ligament is not only very painful but the patient experiences nausea, turns pale, the hands and feet become cold and there is every evidence of slight shock, with a soft rapid pulse. For this reason infiltration of the abdominal wall preliminary to full general anesthesia has not been used to prevent shock, since it is visceral handling rather than abdominal incision which is so evidently productive of shock and our surgical methods are complicated enough now without the introduction of useless questionable procedures.

Local anesthesia plus sufficient ether to annul pain when painful or shock-producing manipulations are to be made is another procedure and distinctly a life-saving one in a few instances. The amount of ether required to distract the patient's attention from the operation and its surroundings and produce primary anesthesia is very small and the succeeding stage of excitement is absent since the patient desires to become unconscious instead of rebelling against the anesthetic. This method does not adapt itself to the hurly burly, noise and commotion of a showy or theatrical clinic but works beautifully in many instances when the patient has confidence in the surgeon and on the other hand when the surgeon's time and attention can be given solely to the patient and work in hand.

Vaginal incision for large pelvic abscess, abdominal incision for neglected appendiceal abscess, drainage of large infected gall-bladders, exploration for intraabdominal hemorrhage, intestinal obstruction, etc., when the patient is in profound collapse, lend themselves especially well to local anesthesia followed by ether only if much intraabdominal manipulation is necessary.

Ether was chosen for the routine anesthetic in all operations in the abdomen in which speed was the element of primary importance, in which perfect relaxation was necessary for good, com-

plete work, in patients not reduced by prolonged illness and in a general way, if the lungs and kidneys were sound when safety was to be considered rather than comfort.

We well know the risks attendant upon the use of ether when bronchitis or pneumonia are actually present. It does not seem to be so clearly recognized that a latent focus of pulmonary tuberculosis may be aroused to activity or that during the prevalence of influenza, bronchitis or pneumonia in a given locality, a large proportion of the residents of that locality are exposed to the contagion of these diseases and are carrying the bacteria in their respiratory tracts. Under these circumstances the administration of a mucous membrane irritant such as ether, undoubtedly produces the requisite *locus minoris resistentiæ* and the safety ordinarily present in its administration is absent. Another anesthetic should therefore be chosen.

Nitrous oxide and oxygen were selected for a great variety of reasons first and foremost among which was the fact that a skilled and experienced nitrous oxide anesthetist was always available. In the absence of such an expert, nitrous oxide would have had a very limited field of application. The chief indications for its use, always with the above proviso, were bronchitis and pneumonia, whether the patient was already the victim or whether they were prevalent in the community at the time. Closely following this was nephritis in a patient requiring operation and on about an equal basis were operations needing careful, painstaking dissection and requiring a long time for their performance, although this is not common in abdominal work but applies more particularly to neck and breast dissections. Great feebleness of the patient short of actual collapse, whether due to persistent hemorrhage or prolonged illness of any sort, was regarded as one of the most positive indications for nitrous oxide anesthesia provided the conditions were not so extreme that the most rapid operation possible was necessary.

A combination of circumstances, the value of which will be discussed a little later, led to the selection of nitrous oxide and oxygen in a good number of instances in which it was not perhaps especially indicated.

The above general remark that ether was chosen rather than nitrous oxide when safety was to be considered instead of comfort, was made advisedly. For plastic pelvic procedures nitrous oxide is the most comfortable general anesthetic known, but in the face of renowned authorities I am willing to venture the

opinion that it is not the safest, while for the majority of abdominal operations it is neither the most comfortable nor the safest.

Let us analyze the prevalent belief that nitrous oxide and oxygen is a perfectly safe surgical anesthetic. The primary reason for this probably lies in its unquestioned safety as a dental anesthetic. Deaths from its use for this purpose are so rare as to be negligible in spite of its daily use in thousands of dental offices throughout the country. In some manner the notion has spread that all that was required for safe surgical anesthesia was some method of continuing the anesthetic state sufficiently long to permit of the performance of operations of gravity, and that this has been accomplished by the simultaneous administration of oxygen.

Now it is probable that dental anesthesia is a combination of true anesthesia and asphyxia, lasting ordinarily but a few seconds or a minute or two at the most. We are led to this belief by the fact that the most skilful gas anesthetists use a high percentage of nitrous oxide until the patient is well under, when the nitrous oxide is diminished and oxygen increased until such time as all jactitation is past and the patient remains quietly asleep with deep respiration, neither asphyxiated nor conscious. Incidentally allow me to interject that this requires time and a skill which is born only of prolonged experience.

Before the above condition of surgical anesthesia is reached, the patient would have been anesthetized to the dental degree, the operation would have been performed and consciousness would have returned. The momentary asphyxia would have caused no possible bad results unless in an individual whose heart had already reached the utmost limit of its endurance. Could surgical anesthesia be induced by a multiplication or indefinite repetitions of dental anesthesias, gas would undoubtedly be absolutely safe for all practical purposes, but this is not true, as in that period of time succeeding primary unconsciousness and preceding surgical anesthesia there is a decided risk of the production of dangerous asphyxia. This is especially true if the patient is difficult to anesthetize. An occasional patient is found who will proceed no farther than this primary unconscious stage and if the administration of gas is persisted in regardless of the patient's condition, it is easy to see how an immediate fatality might ensue. Once the nitrous oxide and oxygen are properly adjusted for the individual patient, however, the crisis is really past so far as anesthetic danger *per se* is concerned and its use can be

continued almost indefinitely, but just at this point there arises a danger generally overlooked for an operation cannot be continued indefinitely even if the anesthetic can, and either the oxygen in the mixture or the carbon dioxide stimulation keeps the patient in better condition while under the anesthetic than after recovery from it. This often leads to undue prolongation of an operation which might otherwise have been hastened, with the result that shock comes on immediately after the anesthetic is withdrawn or after the patient is returned to bed in apparently perfect condition. The rapid return to consciousness after stopping the anesthetic contributes to a feeling of safety which is in nowise justified or logical. A person asphyxiated to unconsciousness by strangling will awaken instantly when air gains access to the lungs, but he was in great danger in spite of his rapid recovery.

Exploitation by those personally interested is, I am sorry to say, another very potent reason for the popular belief in the safety of nitrous oxide. For this the exuberance and enthusiasm of some very prominent members of the profession are directly to blame, and I believe that could they have foreseen the results of their utterances they would have been more circumspect in what they said and wrote. Working under the most favorable circumstances with expert anesthetists they have not hesitated to proclaim the entire safety of nitrous oxide with the result that large numbers of medical men and dentists have equipped themselves with the necessary apparatus and after observing a half dozen administrations, have rushed home to announce the possibility of anesthesia without danger, discomfort during its use or uncomfortable after-effects. These so-called gas anesthetists have sometimes allied themselves with operators who found it to their interest to keep up the clamor, many times with men who will never operate sufficiently often to have an anesthetic death in their entire career, and so the fallacy has spread. One never hears the really expert experienced scientific nitrous oxide anesthetists proclaiming the entire innocuousness of their anesthetic agent. On the contrary such men are constantly endeavoring to point out the indications and limitations of this drug, but the damage has been done and will reveal itself in a bountiful harvest of deaths before the mischief is corrected. This was one of the circumstances referred to earlier in the paper in which it was said that a combination of circumstances had often led to the use of nitrous oxide when it was not indicated. For the

belief of a part of the profession in the safety of nitrous oxide has in some mysterious manner found its way into the public press, and in certain communities is so strongly instilled into the lay mind that patients demand gas instead of ether, and this demand is more persistent if such patients have been subjected to previous etherization with its subsequent nausea and distress.

Certain classes of operations lend themselves especially well to nitrous oxide anesthesia. All gynecological work that is performed through the vagina is as readily done under gas as ether. Muscular rigidity is of no moment here, and after-pain is not severe in any event.

Given their choice these patients will usually choose nitrous oxide if the facts are put plainly before them including the added expense to which they will be subjected. This added expense is another source of danger since the temptation is strong to manufacture the gas instead of purchasing it. The process of manufacture is simple enough, but other products of ammonium nitrate distillation as commercially practised are poisonous and require chemical washing to remove them from the finished product. If a competent chemist is employed to give constant attention to the apparatus and the gas, the cost is much reduced but the absence of expert supervision over gas manufacture is as dangerous as the absence of an expert anesthetist to give the pure gas.

For operations necessitating incision through the anterior abdominal wall we do not feel that patients should be given their choice. A laparotomy can be performed, an appendix can be taken out, intestine resected, gallstones removed, gastroenterostomy or pylorectomy accomplished, all under nitrous oxide, but the work is never so well or so completely done since the temptation to stop, once the primary lesion is overcome, is a strong one. Lane's kinks, combined gall-bladder and appendix lesions, adhesions in distant portions of the abdomen or pelvis are not discovered without unjustifiable force and manipulation, since the abdominal rigidity and protruding gut are always in evidence.

Barring the expense, however, there is a form of mixed ether-nitrous oxide-oxygen anesthesia which, gives the maximum of safety with the minimum of discomfort. The patient is first rendered unconscious with gas as in the well-known gas ether sequence, but instead of discontinuing the nitrous oxide, it is continued, and a very small quantity of ether added to the nitrous oxide oxygen mixture. By this method the danger

of prolonged asphyxia at the outset is avoided while the very small amount of ether used is productive of no danger to the bronchi or kidneys and violent ether sickness is not frequently seen. Muscular rigidity is also avoided and the patient is saved the excruciating pain which follows pure gas and oxygen anesthesia since she dozes for some time after the anesthetic is discontinued instead of awakening immediately as after gas alone.

I wish again to emphasize the point which I made at the meeting of the Ohio State Medical Society in May of this year, that this latter method is the one which is used in those clinics whose gas anesthesias seem to be so smooth and they convey an entirely wrong impression of the true difficulties and dangers of nitrous oxide oxygen anesthesia.

While nitrous oxide and oxygen has many other drawbacks such as occasional failure to produce anesthesia, complicated apparatus, expense, etc., it has a very distinct place in the surgeons armamentarium and should be selected more frequently than is generally done at present; particularly can it be substituted for a large number of conditions in which chloroform has long been the anesthetic of choice, but it is *not* absolutely safe, the pain after abdominal operations is sometimes exquisite, backache following abdominal operations is not less than after the use of ether, severe headache is common and an occasional patient vomits more persistently than after the administration of either ether or chloroform.

DISCUSSION.

Dr. E. I. McKesson, Toledo (by invitation).—I did not expect to participate in the discussion of this paper. I was interested to hear the experience of Dr. Skeel and to take home some new idea. The paper is so radical in many features, however, that it would require something like an hour to discuss the various topics that have been covered.

It is our custom here to check up the effects of the gas and oxygen by means of the pulse, respiration and blood pressure of the patient during operation taken every five or ten minutes, and in this way we know something of the effects that are being produced. In something like 700 or 800 prolonged cases we have found that the blood pressure does not increase or decrease from properly administered nitrous oxide-oxygen anesthesia, but the addition of ether to the nitrous oxide-oxygen anesthesia results in prompt depression of the systolic blood pressure. This means that the ether has a more depressing action than the nitrous oxide and oxygen. The same depressing results can be obtained by *substituting* ether for the nitrous oxide and oxygen. If, for

instance, a patient seems to be a subject for apoplexy, if it is desirable to reduce the blood pressure, it can be readily and promptly accomplished by administering ether, contrary to the opinion that has been offered by pharmacologists, that ether increases blood pressure.

I agree fully with Dr. Skeel that nitrous oxide and oxygen is not absolutely safe. Anesthetists are not absolutely safe. There is more in the anesthetist than there is in the drug used. In the hands of a good anesthetist chloroform is safer than nitrous oxide and oxygen in the hands of a novice for abdominal surgery. But with nitrous oxide and oxygen I believe a patient is in a better condition to withstand any kind of operation, short, prolonged, or traumatizing, than he is with any other drug when given properly. For instance, not long ago I administered an anesthetic for three hours and fifty-seven and a half minutes, the case being one for resection of the descending colon and portions of the small intestine involved in a cancerous growth. The patient was in fairly good condition; his blood pressure had not gone below ninety during the four hours, and showed no post-operative depression, such as suggested by Dr. Skeel. I think this particular case means something, and the fact that nitrous oxide and oxygen does not in itself influence the blood pressure when properly administered, is a very important feature. There are other causes for shock, both on the table and afterward, besides the administration of an anesthetic. I think we all agree as to that.

Dr. William H. Humiston, Cleveland.—I think Dr. Skeel has given us a very fair statement in regard to nitrous oxide and oxygen anesthesia together with the use of ether. I feel that when the deaths are published that have recently occurred from the use of nitrous oxide and oxygen anesthesia, we will be astounded. In the hospital with which I am connected there have been cases recently of death following nitrous oxide and oxygen anesthesia. These deaths have not been published. One was a simple case of appendicitis, with a short operation. The patient expired at the close of the operation from nitrous oxide and oxygen given by a man who has had considerable experience. I do not see any deleterious effect from the administration of ether, and the scientific administration by the drop method is ideal, and I do not want anything better. I have used nitrous oxide three or four times in doing abdominal operations. While I succeeded in getting through, the tense condition of the muscles bothered me to such a degree that the operation was prolonged to double the length of time that I could have done it had the drop method with ether been used.

We have not had in our service during the past six years one case of shock or the appearance of shock, and I have made many prolonged multiple operations, that is, five or six operations, doing trachelorraphy, repairing the torn perineum, opening the abdomen, separating adhesion, removing tuboovarian abscesses,

removing the appendix and shortening the round ligaments, without the patient having any shock. Shock is due to the loss of blood, and exposure and handling the intestines, and if you avoid this, I do not believe it is possible for you to have shock. I do not refuse to operate upon desperate cases that are brought in. I do not select my cases, and I do believe that in abdominal work ether by the drop method in competent hands is the safest anesthetic we have.

Dr. William Seaman Bainbridge, of New York City, referred to the discussion of anesthesia by the Sections on Pharmacology and Physiology, at the last meeting of the American Medical Association, at Atlantic City. Many who attended that joint session and who listened attentively, were appalled at the number of casualties presented by the honest statements of facts concerning the administration of nitrous oxide and the various inhalation anesthetics. Differences in the chemical and physiological properties of the anesthetics, or combinations and sequences of them, the influence of season and climate, the apparatus employed, the method of administration—these and many other factors exercise an influence upon the mortality. The concensus of opinion, therefore, seemed to be that no final conclusion concerning anesthetics could yet be rendered. The need for a more thorough study of the entire subject was expressed on that occasion by the organization of a national society of anesthetists, the next meeting of which will be held in Minneapolis in 1913, during the annual meeting of the American Medical Association. Much will doubtless result from the combined efforts of surgeons and anesthetists in the attempt to overcome the difficulties which are at present involved in the problem of the administration of anesthetics.

In the speaker's own experience the preparation of the patient had proved an important factor in the question of the safe administration. The after-care of the patient materially lessened the unpleasant sequelæ of the ordinary anesthesia.

Two methods of administration deserve especial mention at the present time—the intratracheal, which is still on trial, and the vapor method, the superiority of which as compared with the drop method, may be said to be unquestionably established. Dr. Gwathmey, who has developed the latter method, has given anesthetics over 3000 times for the speaker, being able to keep the patients anesthetized an hour or longer with an ounce of ether and a dram of chloroform, by using the special apparatus which he has devised for measuring and warming the anesthetic vapor.

Referring to spinal analgesia, Dr. Bainbridge took a position between that of Jonnesco, on the one hand, who holds that spinal analgesia has no contraindications, and Murphy, on the other, who holds that it is never indicated. Lane, Waugh, and Grey, of London, claim to have reduced the mortality in certain abdominal operations, particularly in children, by employing

spinal analgesia. Babcock, of Philadelphia, Morton, of San Francisco, and a number of others also used it almost exclusively in operations upon the lower abdomen. With these, and many other favorable facts in mind, one should consider spinal analgesia in relation to the question of safety in select cases, particularly in those involving operations upon the abdomen and lower extremities.

Dr. Skeel (closing).—I would like to ask Dr. Dickinson how many intratracheal anesthesias have been given for him.

Dr. Dickinson.—I cannot tell you. We have been using it for the last four or five months.

Dr. Skeel (resuming).—Ill considered statements based on limited experience embracing but a few weeks or months are responsible for much of the present anesthetic turmoil and this is especially true of nitrous oxide and oxygen as a surgical anesthetic.

The statement is easily made that this or the other particular method is safe and successful, but no one man has had sufficient experience to determine whether this is really true or not.

When such unguarded statements go out from an association of this character a perfect epidemic of disasters is bound to follow. As I have said before there will be a bountiful harvest of deaths if members of the profession do not cease giving out the misleading statement that nitrous oxide and oxygen is an absolutely safe anesthetic.

To say that any man, or woman either, can take up the complicated apparatus necessary after seeing six or eight patients anesthetized and give the anesthetic safely is perfectly absurd. To witness a thousand nitrous oxide anesthesias without the practical experience of giving it himself under the guidance of an expert would not give the cue to the proper administration of this anesthetic. If it requires 16,000 ether anesthesias to produce one death, an experience of a few thousand nitrous oxide anesthesias amounts to very little when it comes to settling the relative safety of the two.

This paper was written while on my vacation which lasted four weeks and two deaths from nitrous oxide were known to have occurred in the city of Cleveland during that time. I protest that nitrous oxide is anything but a safe anesthetic in the hands of one not an expert, and I personally believe it to be much more dangerous than ether in such hands. We do not think to-day that it is safe for one to embark in the business of doing major surgery unless he has had sufficient special training to foresee and apprehend the great variety of things which may happen to interfere with the safe progress of a major operation. Years ago pioneer work without this training was necessary. Likewise no one to-day should undertake to give nitrous oxide and oxygen habitually for surgical cases until he has had prolonged experience under a man who knows how, for there are men who understand it thoroughly, just as there are

men who understand major surgery thoroughly and are competent to give instruction.

In common with the rest of you I have had ether given in thousands of cases and with scarcely ever a *scare* in a thousand and I can assure you that nitrous oxide *scares* are far more frequent, and it is only when the anesthetist is thoroughly familiar both with his apparatus and the agents he is using that gas anesthetics prove at all successful.

Many of the very short operations offer particular inducements for nitrous oxide as the anesthetic as the patient is readily and quickly gotten under and recovers just as promptly with little ill feeling, but its particular advantage lies in the long operation, since anesthesia can be maintained for hours, once the mixture is properly adjusted, without deleterious after-effects and in this lies a great advantage over ether.

This agent is being widely exploited and it is being implicitly accepted by a large number of surgeons who will have many deaths unless they wake up to the fact that they must select their cases for nitrous oxide and oxygen as they have heretofore selected them for ether and chloroform, and my paper was an effort to indicate some of the conditions which made one the preferable agent as against the other two.

Dr. Gordon K. Dickinson, Jersey City.—There is a man behind the gun in this proposition, but, at the same time, we must consider three people in the matter of operation, and the patient is a very important one. Shock is produced, as I understand it, not by the loss of blood, but by traumatism, psychic or otherwise. Every patient who goes to the operating table perturbed in mind is predisposed to shock. Crile stated it clearly when he said that the prepared patient seldom had a shock with a surgeon who is careful in his work. I myself never operate upon a person who will not go to the etherizing room with an undisturbed mind. I want him to give up, and with that condition I have not had a case of shock in six or seven years. An important thing to remember is to prepare the patients mentally for surgical work, and not allow them to be prepared by the ordinary method before operation. Prepare them on the table where you possibly can.

The other matter I wish to speak of is with reference to ether and chloroform and their administration, and that man has the best results with an anesthetic who knows his anesthetic and can give it with the least toxic effect. We give intratracheal insufflation at Christ Hospital and it works beautifully. The patients come out nicely, and we are not bothered by the after-effects. If the man who gives my anesthetics was not an enthusiast, I do not think he would have such good results. The man who loves to give chloroform, gives it well. The man who likes the drop method is successful. Gwathmey with his warm anesthetic is certainly achieving grand success, but each man must practise his method and gain success and confidence in it.

DIAGNOSIS AND OPERATIVE TREATMENT OF THE DISEASES OF THE GENITALIA IN THE FEMALE INSANE.

BY
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Jena.
TRANSLATED BY
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AMONG women who suffer simultaneously from diseases of the genitalia and from nervous disturbances we meet a few in whom the nervous symptoms (light psychoses included) rapidly subside when the disease of the genitalia has been removed. Sometimes the disappearance of all the nervous symptoms immediately follows the cure of the genital affections, as in the reposition of a retroflexed uterus. One is therefore forced to conclude that the nervous disturbances in these cases are only symptoms of the diseased condition of the genitalia.

Such observations cause us to pause and consider whether or not in some of the profound psychical affections, the nature of which prevents these patients being at liberty or consulting a gynecologist, there is a definite relation between the psychical malady and the existing pathological condition of the generative organs. In other words: Do insane asylums contain women whose psychical condition might be improved or cured if relieved of the genital affection? That there are confined within asylums many females who have gynecologic affections has been repeatedly demonstrated and is generally accepted. Furthermore, it is certain, if the disease of the genitalia were removed, a small percentage of these cases would be cured of their insanity.

These considerations prompted me in 1880 to pronounce the following postulate: No uterine catarrh, no chronic tear, no cicatrix of an old parametritis should remain unknown within an institution for the insane.

In every case of the female insane I urged a diagnosis of the condition of the genital organs. Upon this diagnosis, I said, would depend the treatment in many cases and the results following the cure of the genital affection would prove the justification of my demand.

But few heeded my appeal of the past. Schauta in 1891, in his address before the faculty of Vienna energetically supported my demand and has repeatedly referred to it in the various editions of his "Collective Gynecology"—Gesammte Gynekologie.

I have not been able to learn whether or not in any of the insane asylums of Germany or Austria the female insane have been subjected regularly to gynecological examination, followed by proper operative procedure.

For the first series of systematic examinations of the female insane for the purpose of ascertaining indications for operative treatment we are indebted to George Henry Rohe, president of this Association in 1893–1894, whose career was cut short by his untimely death. From the Maryland Hospital he selected thirty-five insane women for a special examination of the pelvic organs and found diseased ovaries and tubes in twenty-five of them besides many lacerated cervices and torn perinei. In only eighteen of these cases did he obtain the consent of the family or legal guardians to perform an operation; later four other cases were added to this number. Of the twenty-two operated upon, two died. The others promptly recovered from the operation and were permanently greatly improved in their physical condition. The psychical effect was immediate and permanent in four; in four other cases the effect was negative; the remaining twelve patients were markedly benefited, some of them to such degree as to render a most propitious prognosis.

A second series of systematic and expert examinations of the genitalia and operative treatment for anomalies of the pelvic organs was reported by A. T. Hobbs while superintendent of the Asylum for the Insane at London, Ontario. In a period extending over six years he examined the pelvic organs of 1000 insane women. Two hundred and fifty-three of the patients in whom lesions were discovered within the pelvic viscera were operated upon as indicated by gynecological principles. Five patients succumbed to the operation, the others recovered, the majority of whom showed a surprising improvement in psychical condition; in the course of time, 100 of the 253 cases recovered from their psychoses.

During the ten years preceding the introduction of systematic examinations of the pelvic organs and the operative removal of the diseased parts, the number of patients cured or improved was 37.5 per cent. During the five years following the introductoin of operative diagnosis and therapy, the percentage of those

discharged as cured or improved rose to 52.7, and notwithstanding this increase in the number of dismissals, the number of readmissions remained the same. Hobbs correctly observed: this proves not only a higher rate of permanent cure of those from whom the genital complications were removed by operative procedure, but when we consider the marked increase in cures effected it also speaks for the etiological importance of these complications.

In the same manner, Hobbs compared the psychical effect of gynecological operations and other surgical procedures upon wholly different regions of the body. During six years, he performed upon men and women of the asylum thirty-nine radical operations for inguinal, femoral, ventral and umbilical herniæ. Although there was noteworthy improvement in the physical condition of all these patients, the effect upon the existing mental malady was negative. Not one recovered.

In the last decade of the nineteenth and beginning of this century, at about the same time Rohe and Hobbs published their interesting and important observations, numerous cases of more or less profound psychoses were reported, especially in American journals, to have been promptly cured when the disease of the pelvic organs had been removed by an operation.

An extensive theoretical consideration of this subject by MacNaughton Jones, in 1900, should here be mentioned. This great authority warmly advocated the introduction of gynecologic diagnosis and necessary therapy for all female inmates in every insane asylum. It does not appear that the psychologists of Great Britain and especially those in charge of London's large asylums have recorded successes of any kind.

In recent years several reports of a rather striking character have appeared. Women, who without observation or treatment of any kind, were removed by their husbands, and taken to gynecologists, who found involvement of the genitalia and indications for relief by an operation. The operation resulted not only in a physical but also in a psychical cure. Bossi of Genua and Schukkaert of Loewen have reported such cases.

Almost every report and treatise on this subject emphasizes in its caption that the genital ailment is the cause of the psychosis. To the psychologist and psychiatrist we leave the etiological investigation of the development of a psychosis. Strictly speaking we only know that in a number of cases the genital disease is the one link in the chain which fetters the mind and

that the removal of this link liberates it. It is this realization, confirmed by experience, which justifies our claim.

For instance, we are as unable as the psychiatrist to explain why, among one thousand retroflexions of the uterus there is unquestionably one and possibly, a second and a third which enshroud a mind in darkness. Of these thousand cases of retroflexion there may be twenty in an insane asylum and among these there may be two or three women whose minds could be freed by an operation which corrects the retroflexion.

What I have just said of retroflexion is equally true of all other diseases of the female genitalia. In the majority of women the genital disease exists without mental disturbance. In asylums, too, we find that of the many women with diseases of the genitalia there are few whose pelvic maladies are responsible for the existing psychosis. It cannot be definitely diagnosticated by the psychiatrist more than by the gynecologist in how many cases the relation between the mental affliction and the disease of the genitalia is of such character that the removal of the latter would release the benighted brain. Success or failure of the operative therapy alone can determine this.

Consequently, all insane women suffering from pelvic disorders should be relieved by gynecologists.

It has been said that every insane woman should have the genital apparatus examined and if necessary operated upon before commitment to the asylum (Bossi). This can be accomplished in but few cases. The character of the insanity frequently makes a speedy commitment necessary. Some take it for granted that the genitally diseased insane women are referred to the gynecologist. This, too, is rarely done. And when an insane female, whose trouble is obviously genital, is referred to a gynecologist and operated upon, it is in all probability one of the many cases in which the genital disease bears no relation to the patient's insanity.

The psychosis remains unchanged in the healthy body. Such a case may be used to demonstrate to the laity and others that the insanity bears no relation to the disease of the pelvic organs.

The only reliable means for saving those insane women in whom the genital disorder is the closing link of the chain which fetters the mind, is that all genitally diseased female inmates of asylums should be subjected to operative treatment.

Another very important point which should not be overlooked is that the women enjoy much better physical health though

their mental state could not be improved by disposing operatively of the genital disease.

We gynecologists deem it our duty to help suffering womankind and hence it behooves us to protect as many profoundly afflicted women as possible from a sad fate which need not be portrayed.

To accomplish this the following simple plan might be adopted; by prearrangement with the superintendent of the asylum, the gynecologist, with the necessary assistants, may visit the institution regularly, at frequent intervals, to examine the women who have been admitted in the meantime. The history should be taken and record made of the examination and diagnosis. A consultation with the director of the asylum should follow and with the physician in charge, if there is one.

Next, negotiations with relatives or guardians would be in order, for the purpose of obtaining the consent to perform the necessary operation which is based upon gynecological indications and upon the prognostic consideration for the body and mind of the patient. The operation should be performed in the asylum, so that the patient may be under observation of the psychiatrist without interruption during the treatment following the operation. It is understood that the asylum has modern and fully equipped operating rooms. Later, two or three of the operations previously determined upon, may be performed. After this a further series of well conducted examinations is made. The newly admitted patients should be examined early because the sooner the disease of the genital organs is disposed of, the better the prospect for a favorable psychical result.

The older inmates, too, should be examined and those with genital involvement should not be deprived of the benefit of an operation; because even in those who have been confined in an institution for years favorable results have been obtained through the restoration of the genitalia to a healthy condition.

There are three ways to attain the desired object:

(1) Let us continue our efforts to convince the directors of insane asylums that only a limited number of women can be brought to the road of recovery until all genitally diseased females are cured, if possible. My own efforts have not ceased despite thirty years of fruitless labor in this field.

(2) The authorities might be influenced when appointing directors or superintendents, especially in new institutions, to select men who favor systematic examination of the genitalia of

the female insane, and who will insist upon the installation of the necessary accommodations for operative treatment of patients in need of this therapy. I have sought to accomplish this, but without success. When new institutions are founded a medical superintendent is usually appointed at once; he is considered an expert, and as such makes arbitrary disposition, in the way of rules, regulations and arrangements. The psychiatrist wants to be monarch of his establishment.

(3) The third way is the only certain one, as has been historically demonstrated in the United States of America and in Canada by Rohe and by Hobbs, who were the directors of their respective institutions in which the unique, unparalleled and unprecedented successful cures were accomplished by operative therapy upon the female insane. In this way and in this way alone, can we with certainty secure convincing material in great abundance. Later the other two methods may be employed with success.

It behooves every one of you, my dear colleagues, to work, each in his own state and to see to it that in cases of new appointments for old institutions and for asylums to be erected, a gynecologist who is skilled in diagnosis and also an experienced and successful operator is made director or superintendent of the entirely independent female wards.

CONSERVATIVE OPERATIONS ON THE OVARIES, INCLUDING A REPORT ON 112 CASES.

BY
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After an experience of ten years in conservative work on the ovaries and Fallopian tubes, I do not believe it good surgery to sacrifice a healthy ovary or an ovary that is only partially diseased, providing the woman is not over forty years of age and there is no suspicion of malignant disease or recent gonorrheal infection.

There was a period twenty years ago when ovaries were needlessly sacrificed, because asepsis made the abdominal operation a comparatively safe one. But the neurologist and better class of general practitioners made their protests felt and this form of work, nearly or quite approaching malpractice, has been stopped.

A well-known medical man of national repute is quoted as saying that he preferred to see most of these ovaries in the abdominal cavities of women than in the surgeon's pickling jar.

Brothers states: "If the gynecologist deserves to have a place in surgery at all—and this seems to be denied him by certain large hospitals and by some surgeons—it is because of much of the work done in this particular branch of pelvic surgery. It is not the purely mechanical part of his work which justifies the gynecologist to pose as a specialist."

It will be conceded that every good surgeon should be able to do this kind of work equally well, provided his opportunities for gaining experience occur often enough. It is in the laboratory, in the clinic, and in the operating room that the student devoted to diseases peculiar to women obtains his advantage over the general practitioner of medicine and over the general surgeon. The result is a clearer insight into diagnosis, a better judgment as to the proper course to pursue, and greater familiarity and facility in the technical details of gynecologic operations.

Cystic disease of the ovary is quite common and the distention gives rise to a pressure that is manifested in suffering and marked nervous phenomena. The smaller ovarian cysts may be

excised and healthy ovarian stroma left that will continue to functionate.

The infected and suppurating tubes and ovaries do not offer so favorable a field for conservative work. But when unilateral, a favorable condition exists for conservatism as will be shown later on in the details of some of my cases.

The cases I tabulate here embrace the period from 1899 to 1909. The efforts I have made in the past six months to learn of the present condition of the cases and state of health since operation have met with but partial success.

Of the 112 cases in which conservative operations have been performed but seventy cases have been heard from; nineteen of this number have given birth to twenty-one children. Many have moved from the city, undoubtedly some have died, and a certain percentage consulted other surgeons who have relieved them of what was left from former operations.

Among the 112 cases I have conservatively operated upon, but three returned for a second operation.

These three cases will be detailed.

	Number
Removal one ovary, resection of other	84
Resection of both ovaries	5
Resection right ovary	19
Resection left ovary	12
Removal both tubes and one ovary, resection of remaining ovary	1
Total	112

Mortality nil.

If a similar percentage of pregnancies occurred in those patients not heard from it would increase the percentage to about 28. This of course is speculative and cannot be used. But in the 19 per cent. out of the 112 cases we have a showing, convincing to a judicial mind, that conservative operations are worthy of general adoption.

Case I.—1909. Mrs. K., age thirty-one, two children, no miscarriages. Had a phlebitis following birth of first child. Menses began at ten years of age, regular, duration two to three days. Always painful. Came complaining of constant headache, backache and pain over left lower quadrant of abdomen radiating down thigh.

Examination revealed partial laceration of perineum, cervix with large bilateral laceration, uterus large, tender, retroverted. Right ovary palpable, enlarged. Left ovary cystic.

Under ether anesthesia, uterus curetted, laceration of cervix

repaired. Abdomen opened in median line, uterus brought forward. Left ovary size of hen's egg, removed. Right ovary sclerocystic, two-thirds of which was resected. Gilliam operation on round ligaments. Patient left table in good condition. Uneventful recovery.

Pathologist's Report.—Chronic interstitial endometritis, glandular hypertrophy of cervix. Cyst of left ovary. Portion of right ovary sclerocystic.

April 10, 1906. Dr. Zebold of Shelby reports that he delivered this patient of a healthy child at term. December, 1910, at Toledo, Ohio, she gave birth to second child, normal delivery.

CASE II.—1904. Miss Stella H., seamstress, age twenty-four. Menses regular from sixteenth year, duration three to six days, attended with severe backache.

She came to me complaining of severe backache and pain over left inguinal region. Pain in left hip caused her to limp, not able to stand with foot flat, but walks on ball of foot, latter being turned outward. Treated at both Lakeside and Charity Hospitals. Put to bed for six weeks with extension and weights. No permanent improvement resulted. Has had hysterical fits.

On examination found vaginal outlet relaxed, labia minora, granular (probably a masturbator). Vagina roomy, cervix normal, uterus swollen, tender, retroflexed. Left ovary prolapsed, indurated. Right ovary enlarged, tender, and under fundus of uterus.

July 6. Operation, ether anesthesia, uterus dilated and curetted. Abdomen opened in median line, uterus separated from adhesions to rectum. Left ovary sclerocystic, one-third resected, remaining portion carefully sutured with catgut. Right ovary size of unshelled walnut, contained cysts and hematoma. Ovary and tube removed. Gilliam operation on round ligaments. Recovery uneventful and was discharged August 6.

Pathologist's Report.—Glandular hypertrophy of endometrium. Interstitial endometritis. Sclerosis of both ovaries. Multiple follicular cysts of right ovary.

This patient improved rapidly and was married during the year. Dr. Osborn of this city reported that he attended her in confinement May 5, 1906, and she was delivered of a healthy male child at term. Convalescence normal.

CASE III.—Miss M. L., age twenty-five. Menses appeared at eleventh year of age, always painful, duration five to six days.

Since a curettment three years previously has been worse, with

deep-seated pain in right lower quadrant of abdomen, extending down thigh to knee, complains of prolapse of uterus, backache and occipital headaches. Examination revealed a normal outlet of vagina, cervix conical, uterus sagging in pelvis. Both ovaries prolapsed and readily palpable. Operation Nov. 4. Removed pessary, uterus dilated and curetted, clitoris freed of adherent prepuce, sphincter ani dilated, abdomen opened, removed left ovary and tube, resected right ovary and removed catarrhal appendix. Shortened round ligaments by Gilliam's method. Recovery smooth and prompt. Discharged Dec. 3.

Patient married after a year, now lives in Duluth, Minn., and in April, 1907, gave birth to a healthy child.

CASE IV.—Mrs. D., works in restaurant, came into hospital through dispensary service. Early history missing. Had been gradually growing worse and worn out from the suffering in lower abdomen, backache and headache. Examination shows vaginal outlet and vagina normal. Cervix in axis of vagina, slight unilateral tear, uterus retroflexed, fixed. Both ovaries prolapsed, enlarged, tender. Operation June 24, 1904. Uterus curetted, sphincter ani stretched and a few rectal tabs trimmed off. Abdomen opened in median line, uterus bound down by adhesions, separated and brought forward. Left ovary sclerocystic, removed, with tube. Right ovary cystic, punctured freely and tension relieved. Shortened round ligaments by Gilliam's method. Uneventful recovery.

Pathologist's Report.—Glandular hypertrophy of endometrium. Sclerosis of ovary.

Confinement Oct. 2, 1905, at St. Ann's Maternity, by Dr. H. H. Powell. Labor pains began Oct. 1, at 8 A. M. and continued to 3 P. M., no further pains until 3 A. M. of Oct. 2, when they began and continued until head was upon perineum. Ceased and then forceps were applied and a well-developed child delivered. Child did not breathe until artificial respiration was resorted to. Child died at 4 P. M. day of delivery. Patient's recovery uneventful.

CASE V.—F. W., single, age twenty-one. Menses began at thirteen, regular, duration five days, first day painful. Came complaining of constant severe pain in right lower quadrant of abdomen, radiating down thigh. Backache. Very nervous. Examination revealed nothing abnormal, except that both ovaries were prolapsed and tender.

Operation January 24, 1905. Uterus dilated and curetted, glans clitoris freed from preputial adhesions. Abdomen opened

in median line. Appendix found with a constriction near base, some adhesions found, appendix removed. Right ovary cystic, removed. Left ovary punctured and tension relieved.

Recovery prompt. Discharged Feb. 20, 1905. Married in 1906 and removed to California. She returned to Cleveland on a visit in 1910 and reported that she had given birth to a healthy girl baby two years before. Is well and free from pain.

Case VI.—Mrs. K., age twenty-seven, married eight years, one child two years after marriage. Has not been well since. Came complaining of backache, headache and a dragging sensation in lower abdomen. Examination revealed a moderate tear of perineum, laceration of cervix, uterus large, retroverted, cavity 4 inches deep. Both ovaries prolapsed and enlarged.

Operation March 18, 1905. Uterus curetted, cervix repaired. Laparotomy. Both ovaries cystic, removed. Gilliam operation on round ligaments. Appendix removed. Recovery uneventful.

Pathologist's Report.—Interstitial endometritis, cystic degeneration both ovaries.

Came Sept. 1, 1908, and reports having had a miscarriage. Dr. Lowenberg attended her, fetus well formed. A portion of an ovary must have been left at time of operation, or perhaps she had a supernumerary ovary.

Case VII.—Mrs. C. W., age twenty-eight, married two years, one child, instrumental delivery July 22, 1905. Fair recovery. Came to me complaining of being exceedingly nervous, with irregular, palpitating heart action. Pain in right groin. These symptoms all came on several months after birth of child. Had an attack of appendicitis eight months ago. Examination revealed a lacerated cervix, both ovaries palpable, enlarged, tender.

Operation.—Uterus dilated and curetted, lacerated cervix repaired, abdomen opened in median line. Left ovary was large, cystic, resected. Right ovary cystic, punctured and tension relieved. Appendix was found postcecal, enlarged, elongated and vessels injected; removed. Recovered rapidly and went home in four weeks.

Pathologist's Report.—Chronic interstitial endometritis, chronic catarrhal appendicitis, sclerocystic ovary.

Gave birth to male child Sept., 1907, normal delivery, has been well since.

Case VIII.—Mrs. F., married, age twenty. One child, normal delivery. Secondary operation. Came complaining of constant

pain in lower abdomen both sides, backache, headache, loss of appetite. About one year ago patient fell and mmediately after pain developed in right iliac region, was confined to bed for two weeks. Examination revealed laceration of perineum, bilateral laceration of cervix, uterus enlarged and tender, both lateral vaginal vaults tender.

Operation July, 15, 1906.—Uterus curetted and torn cervix repaired. Laparotomy. Right ovary size of hen's egg, cystic, removed. Left ovary cystic, tunica thickened, punctured, appendix normal. Convalescence smooth, and went home in three weeks.

Pathologist's Report.—Normal cervical tissue, cystic degeneration of ovary.

Dr. Romig reports he attended this patient in confinement Jan. 28, 1909, and delivered a girl baby.

April 17, 1911. Patient came to my office to consult me for a persistent backache, headache, loss of flesh, pain in left iliac region. Examination shows partial rupture of perineum, cervix lacerated, swollen, and in axis of vagina, uterus enlarged and retroverted, mass to be felt in left vaginal vault the size of a hen's egg.

Operation, May 1 —Cervix repaired, appendix removed, multiple cysts in left ovary removed.

Pathologist's Report.—Ovary smaller and harder than usual, and grayish in color. Follicles in all stages of atrophy and degeneration, and in some places are converted into fibrous nodules. There is a marked hyaline change in the arterial wall, and very little normal ovarian tissue left, ovary has undergone cystic degeneration. The largest cyst contains fully 2 drams of a chocolate-colored fluid.

Case IX.— Mrs. L. J., age twenty-eight, married six years, one child, instrumental delivery, four miscarriages. Came complaining of headache, backache and severe pain in left inguinal region. Much worse when on her feet. Painful urination. Examination shows partial rupture of perineum, cervix small tear, uterus enlarged, mobility impaired. Left tube and ovary in a mass, size of small orange, painful. Right ovary prolapsed, swollen, movable.

Operation, March 7, 1909.—Curetted uterus, opened abdomen. Left tuboovarian abscess, adhesions firm and vascular, abscess removed. Right ovary enlarged, cystic, cyst punctured, tube congested, but otherwise normal. Recovery in usual time.

Pathologist's Report.—Abscess and degeneration of ovary and tube. Interstitial endometritis.

June 15, 1907. Returned complaining of pain in right inguinal region, menstruating regularly.

September 9, 1907. Returned feeling well, gain in weight, and reports absence of menses. Examination shows uterus enlarged to size of five months' pregnancy, milk in breasts. Patient moved and was lost track of.

CASE X.—Mrs. K. S., age twenty-five, two children, normal deliveries. Came complaining of cramping pains in left side, pain down thigh, these symptoms have existed since birth of last child, backache, headache, constipation, leucorrhea. Examination reveals partial tear of perineum, bilateral laceration of cervix, uterus enlarged, movable, tender.

Operation, March 12, 1907.—Uterus curetted, cervix repaired. Abdomen opened, right ovary cystic, removed. Left ovary hardened, thickened tunica, one-half ovary resected. Concretion found in appendix, appendix removed. Recovery prompt.

Pathologist's Report.—Right ovary cystic, portion of left ovary resected, sclerotic. Chronic catarrhal appendicitis.

April, 1909. Delivered of healthy female child. Dr. Williams of Collinwood attending.

CASE XI.—April 19, 1907. Mrs. M. W., age thirty, nullipara. Menses began at twelve years of age, painful every time, rather profuse. Comes complaining of pain in right iliac region, tender on pressure, pain in right hypochondrium. Had typhoid fever last year. Has not been well since menstruation first began. Examination reveals vaginal outlet relaxed, cervix small, uterus held in place by pessary, has retroversion.

Operation, April 22, 1907.—Uterus curetted. Abdomen opened, left tube and ovary adherent, adhesions separated, cysts in ovary punctured. Right ovary enlarged, adherent, cystic, adhesions separated, ovary removed, tube not disturbed. Gall-bladder examined, found normal. Recovery in usual time.

Pathologist's Report.—Chronic endometritis, chronic appendicitis, cystic degeneration of ovary, and hematoma.

Patient recovered a good state of health. Dr. Zebold reported to me in April, 1911, that he was called in consultation with another physician to see Mrs. W., Feb. 20, 1911. She had placenta previa. Mother lived but a short time after birth of child. The child lived a few hours.

CASE XII.—Miss J. R., age twenty-three, nurse. Menses began

at fifteen years of age. Irregular for a time, appeared every two weeks, latterly every twenty days, painful, always attended with systemic disturbances. Profuse flow, clotted blood. In 1906 had operation for appendicitis. Dec., 1906, patient fell down stairs, striking coccyx. The fall gave rise to a free discharge of clotted blood from uterus. Catheterization of bladder required for a time. April 23, 1907, patient again had a severe all which aggravated all of her previous symptoms. Complains of sharp pain in right inguinal and lumbar region, extending across to left inguinal, and being especially severe in suprapubic region. Compelled to give up work for a year. Examination revealed a small, anteflexed uterus, tender, both ovaries prolapsed, enlarged and painful.

Operation, May 21, 1907.—Uterus dilated and curetted, clitoris freed. Abdomen opened. Right ovary large, cystic, one-half resected and ovarian ligaments shortened. Left ovary thoroughly cystic, removed. Both tubes left undisturbed. Made a good recovery and in four months resumed her work as nurse.

Pathologist's Report.—Sclerocystic ovaries.

Patient married in 1909. Sept. 2, 1910, Dr. Henry Fitzgerald, Westminster, Md., reports patient three months pregnant. Feb., 1911, gave birth to a healthy female child.

Case XIII.—Pus case. Large tuboovarian abscess.

Mrs. P., age twenty-seven. Two children, one miscarriage. Came to hospital in a septic condition, great loss of weight, sweating, chills. Severe pain and mass in right lower quadrant of abdomen. Three years ago was operated for appendiceal abscess, free incision and drainage, no attempt to remove appendix. A fistula remained which discharged pus ever since. Examination revealed a mass at side of uterus in right vaginal vault extending to region of appendix, uterus deviated to left. Patient was in no condition to stand a radical operation. Under local anesthesia with cocain, the fistulous opening was enlarged and a drainage tube wrapped in gauze inserted. Patient improved daily until Aug. 31, when she was sent home to return later for radical operation. Her family physician, Dr. Barricelli, attended her, dressed the wound and kept it open. Returned Oct. 16, 1907. General appearance much better, had gained in weight, fistulous tract still open and discharging pus, bad odor. Pus examined and colon bacillus found.

Operation, Oct. 17, 1907.—Uterus curetted, abdomen opened through right rectus muscle. Extensive adhesions of omentum

and intestines to a mass to right of and reaching above uterus. Omentum ligated in sections and lower third removed. The mass proved to be a large tuboovarian abscess with tip of appendix adherent thereto. With difficulty the tube and ovary were shelled out and a V-shaped portion of fundus uteri cut out with Fallopian tube and united with catgut suture. Appendix removed.

Left ovary cystic, punctured but not removed. A portion of large intestine and nearly half of pelvic cavity denuded of peritoneum. A long strip of 1 per cent. iodoform gauze was laid over this denuded surface from the culdesac up to and out through the abdominal opening for drainage during the first forty-eight hours, and to provide for the probable escape of feces later. We anticipated shock that usually comes on before the end of operations of this character, by starting the submammary injection of normal saline solution when patient was first placed upon the operating table. This was continued during the operation and two quarts were introduced in this manner. Patient left table in good condition, no shock following. One week after operation, fecal matter began escaping through drainage, this continued in large quantities for ten days then gradually subsided, and on Nov. 30, about five weeks after operation the tract was healed and the patient left the hospital.

May 18, 1908, patient returned very much improved in looks and 35 pounds heavier. Abdominal wound remains closed. Menstruating regularly, no pain. Oct. 19, 1908, returned complaining of pain in left lower quadrant of abdomen. Cessation of menses since July 21. Examination found uterus forward enlarged to a size corresponding to a three months' pregnancy. Confinement May 7, 1909, male child, weighing 12 pounds, Dr. Barricelli attending, and reporting labor began at 5 P. M. and ended at 11 P. M. Oct. 9, 1910, gave birth to second child, female weighing 10 pounds, Dr. Barricelli attending.

CASE XIV.—Mrs. B. S., age twenty-one, married fifteen months, one child, five months old. Complains of backache, headache and bearing-down distress. Pain in both iliac regions. Examination reveals uterus large and retroflexed, movable, both ovaries readily felt, swollen and tender.

Operation, Dec. 16, 1907.—Uterus curetted, abdomen opened, uterus brought forward, a cyst the size of a cherry excised from each ovary and wounds sutured. Several smaller ones punctured.

Both ovarian ligaments shortened and a Gilliam operation performed on round ligaments. Rapid convalescence. An easy case in comparison to the one just reported.

Oct. 1, 1909, reported pregnant and delivered later by Dr. J. M. Moore, normal confinement.

CASE XV.—Mrs. R. D., age thirty-one, three children. Came complaining of severe constant pain in left inguinal region, backache and headache. Operated three years ago in Glasgow, right tube and ovary removed, and suspension of uterus made. Had one child since operation. Confinement prolonged. Examination revealed a bilateral tear of cervix, uterus enlarged and retroverted. Left ovary prolapsed, enlarged and tender. Nothing felt in right vaginal vault.

Operation, Feb. 8, 1908.—Uterus curetted, cervix repaired, abdomen opened, appendix normal, stump of right tube found, not patulous, left ovary enlarged, sclerocystic, one-third resected. Gilliam operation on round ligaments. Recovery uneventful.

Pathologist's Report.—Interstitial endometritis, sclerocystic ovary.

Jan. 4, 1909. Patient reported her last menstruation was Nov. 28, 1908, believes she is pregnant. March 10, 1909, returns and reports she has felt fetal movements. Moved to Akron and was confined at the Akron City Hospital, Sept. 21, 1909, child healthy and nurses.

CASE XVI.—Mrs. C. M., age twenty-six, one child, two miscarriages. Came complaining of pain in back and lower abdomen, dragging sensation, headache. Trouble starts from child birth sixteen months ago. Examination reveals laceration of perineum, bilateral tear of cervix, uterus forward but low down, both ovaries prolapsed, enlarged, tender. Pain on pressure over McBurney's point.

Operation, June 11, 1908.—Uterus curetted, cervix repaired, perineorraphy, abdomen opened, appendix kinked, catarrhal, removed. Right ovary cystic, one-half resected, left ovary smaller but cystic, cysts punctured. Rapid convalescence. Left hospital July 3, 1908. Returned May 5, 1909, has been well. Last menstruation Feb. 6, 1909. Examination, uterus enlarged, softened, secretion in breasts. Undoubtedly pregnant. Confined November, 1909, normal labor. On Oct. 18, 1910, was brought into hospital after having a sudden onset of cutting pain on left side, lower abdomen, attended with faintness and partial collapse.

A diagnosis of ruptured ectopic pregnancy was made, operation performed, and left ruptured tube and ovary was removed, large dots of blood filling cavity. Right ovary examined and found in good condition. Recovery prompt.

CASE XVII.—Mrs. S. L., age twenty-four, two children, two miscarriages. Came complaining of pain in back and limbs and in lower abdomen, constipated, gradual loss of weight and strength. This condition developed after birth of last child. Examination, partial rupture perineum. Bilateral laceration of cervix. Uterus enlarged, forward, mobility impaired.

Operation, July 18, 1908.—Uterus curetted, cervix repaired, abdomen opened. Both ovaries adherent to tubes, separated, tubes patulous. Left ovary cystic and a portion resected. Appendix enlarged and infected, removed.

Pathologist's Reports.—Chronic endometritis, chronic appendicitis, cystic ovary.

Twenty-four hours after operation patient developed a double pneumonia, was dangerously ill for ten days, but left hospital two months after operation.

Nov. 1, 1909. Patient returned and was found to be pregnant. Confined Jan. 1, 1910 and was delivered of an 8 pound baby girl by Dr. R. A. Bolt. Patient has developed evidences of a tubercular laryngitis with suspicious signs at right apex.

CASE XVIII.—Sept. 12, 1908. Mrs. M. K., age twenty-five, married eighteen months, one child at term, three weeks old. Complains of pain over heart and in left lower abdomen, pain is sharp and intermittent, coming at intervals of one-half to two hours. Can feel tumor in lower abdomen. Physical examination of chest revealed that patient had a complicated heart lesion, consisting of aortic insufficiency with mitral stenosis and insufficiency. Double murmur at apex, diastolic thrill, systolic murmur at second right interspace, capillary and water hammer pulse, pistol shot femoral. Examination of pelvis and abdomen shows a tumor mass extending to umbilicus, movable, tender. Vaginal outlet torn, large bilateral tear of cervix, uterus enlarged and posterior to a large tumor mass in front.

Operation, Sept. 14, 1908.—The patient's precarious condition ruled out a prolonged operation. Morphine, 1/4 grain and atropine 1/150 grain were given hypodermically half hour before operation. When placed upon operating table the submammary injection of normal saline solution was begun. Ether, by drop method. Abdomen opened by a short incision in median

line. A large, smooth-walled, fluctuating tumor was revealed, as large as a child's head, arising from the left side and twisted several times upon a long pedicle. Upon the introduction of a trochar, a thick, cream-colored, butterfat fluid material was extruded. Abdominal excision lengthened, tumor was delivered. Ligated pedicle and tumor removed. Three pints of saline was introduced during the operation. Pulse remained good throughout, there being no evidence of cardiac disturbance. Right tube and ovary found to be normal. Oct. 4, patient dismissed. Heart lesion same, compensation apparently accomplished.

Pathological Report.—Thin-walled dermoid cyst, size of fetal head, contains thick butterfat material and fine blonde hairs, no other embryonic tissue. No evidence of malignancy. Sac quite vascular, with a long fine pedicle containing vessels.

Patient returns Feb. 10, 1909, three months, pregnant. Patient returns Aug. 5, 1909, eight months pregnant, feeling well. No report since as patient moved from her former home.

Case XIX.—Mrs. C. R., age thirty, married thirteen years, one child twelve years old, four miscarriages, last one eighteen months ago, induced.

Operation, Dec. 14, 1908.—Left ovary and tube removed for cystic disease with adhesions. Cysts in right ovary punctured. Prolapsed right kidney. Gastroptosis. Convalescence normal. Dismissed Jan. 8, 1909.

January 31, 1910. Patient came back and reported that she had given birth to a girl baby, Nov. 23, 1909. No abnormalities, good convalescence. For last three weeks patient has had bloody discharge with some odor. Examination revealed carcinoma of cervix, advised immediate radical operation, this was declined and she did not again return.

DISCUSSION.

Dr. Albert Goldspohn, Chicago.—The resection of ovaries is one of the best things that the gynecologists do, that is, in the operations that are not for saving life. It is something that has interested me ever since August Martin in Berlin brought out his first publication on the subject. After that, a gentleman in New York did the operation and published it. I was the next man who published anything on the subject west of New York. I have had many tussles, in these years, with men on that subject; who, on account of a defective technic or bad judgment, had poor results. These were mostly general surgeons. What may be saved and what must be removed?

They did not know; and they did not succeed; and others failed because they did not use the right technic. Furthermore, I have had tussles with visionary theorists who, by making a series of sections of some of these enlarged cystic follicles, would occasionally, not often, find a Graafian follicle in such cysts; and therefore this morbid physiology must overthrow and paralyze everything the gynecologist can do. They have said, that is a normal ovary; you must not touch it if it is six times its normal size, and it does not matter how much pain it may cause the patient. It is better to do nothing for her. There are that kind of men in the world. They do not succeed in gynecology, however. They have to make a living out of general surgery.

So far as the technic is concerned, not long ago (I think it was last year), a man from New York State or New York City published an article in favor of resection of ovaries, but he commits a serious fault in technic by attempting to use almost any kind of suture material. That is radically wrong in my estimation. I have always contended that the surgery of the ovary requires not only the finest catgut but also a degree of asepsis such as we do not need for ordinary intraabdominal work. We should do like the surgeon who is exceedingly cautious about asepsis in using plates in the treatment of fractures, and in the surgery of bones, and joints; that is, he does his work with sterile instruments and not with gloved fingers even. That is the kind of asepsis we want if we would achieve success.

Then comes the use of the finest and most readily absorbable suture material, so placed as not to cut off the nutrition of the ovary. Coaptation but not constriction. These are the things that are necessary in order to achieve success.

Dr. Francis Reder, St. Louis.—I was particularly interested in what Dr. Goldspohn had to say in regard to the technic of this interesting paper of Dr. Humiston.

So far as the resection of a portion of the ovary is concerned, it necessitates considerable experience to recognize the normal from the abnormal structures in a pathologic ovary. But as to the technic: it becomes absolutely necessary to excise enough of the ovarian tissue to obtain a good apposition of the capsule. For this reason it is sometimes well to sacrifice some of the healthy tissue of the ovary to secure this coaptation. It promotes the reparative process and prevents sequelæ, such as adhesions to the intestines.

With reference to the suture material, it is a fact that the finest suture should be used, such as No. 00 catgut, if you have sufficient confidence in it, if not, No. 1. In suturing the ovary a round needle, either straight or curved, should be used. The first row of sutures is placed at a good depth to control bleeding and to bring together the ovarian tissue. The next row of sutures simply coaptates the edges of the capsule. A continuous suture is the preferable one. It is not necessary to

clamp the base of the ovary with a hemostat, by taking a piece of twisted gauze and throwing it about the base, clamping it so it is secure, is sufficient to shut off the circulation and prevent the field from becoming bloody. One might be led to believe that much pain follows the suturing of an ovary; there is, however, but very little pain.

The restoration of an ovary to its normal state is perhaps as grateful a surgical measure as there is in gynecology.

Dr. K. Isadore Sanes, Pittsburg.—I should like to briefly report a case which demonstrates how much can be done in the line of conservative surgery on the ovary. A prostitute was admitted to the Gynecological Ward of the West Penn Hospital of Pittsburg for bilateral acute pyosalpinx. She gave a history of syphilis of about two years' standing and acute gonorrhea of one year. We kept her for about one month at the hospital until all the acute symptoms subsided, and then did a laparotomy on her. After separation of adhesions, the tube and ovary on one side were completely removed and on the other side the tube with the cornu and the greater part of the adherent cystic ovary were removed leaving a thin portion which was sutured over the raw surface as a sort of protective patch. About a year later she came to the office pregnant. She was delivered at the West Penn Hospital of a child without any complications.

Dr. Hugo O. Pantzer, Indianapolis.—The number of cases operated and followed by pregnancy that become known, does not indicate the full percentage actually occurring. The full estimate of the gain by conservative methods should, moreover, include the cases not traceable after operation, and also cases that could conceive, but where conception is countermet by preventive measures. The latter class is large, because the fear of a pregnancy and parturition is uncommonly heightened in the minds of those who have undergone operation for the relief of parturient injuries.

Regarding the surgery of the ovary, I have not found it particularly less successful than the surgery of other tissues of the body. I found no harm to follow the sewing of the ovarian stroma, no need to include in the stitches only the capsule. The union established by sewing can be likened to the ligamentous union in bones, that is, in the sequence the scar stretches under intracapsular swelling. By this change the heretofore unyielding, thickened albuginea which obstructed advancement and follicular rupture—under the ligamentous scar the Graafian follicle now grows toward the area of the yielding scar, which is less resistant than the sclerotic albuginic wall. This is verified by the lessening or absence of pain at menstruation after operation.

In the cases of ovarian sclerosis, I pare the thickened albuginea over the entire surface of the ovary. In extreme cases, in addition, I divide the ovary into lateral halves, sew it again, and so aim to obtain more yielding tissues along the line of ligamentous

union. I have no fears of adhesions by such procedures. Without the presence of an infectious process, permanent adhesions do not form. In the presence of an infectious process, of course, no plastic surgery upon the ovary, as elsewhere, should be attempted.

Dr. Humiston (closing the discussion).—The time in which to report cases of this kind is so short that one is not permitted to take up in detail the technic in these cases. After opening the abdomen, I can lift the ovaries up and inspect them. If I find they are suitable for resecting, I grasp the ovary with my left thumb and finger to control the hemorrhage. The unhealthy part I then proceed to resect. I take a sharp knife, take out the portion that is cystic and diseased with a clean cut, and then approximate the edges carefully. I use a round needle with No. 1 catgut and find it satisfactory. I take a great deal of pains in coaptating the line of incision nicely to avoid oozing of blood. If you introduce sepsis it is a different matter, but I think nowadays we have sterilization perfected, and with an operation performed with rubber gloves, the matter of asepsis is readily secured.

I am only sorry that I could not trace out all of these cases because it would have made a much better report, but in quite a large clinic made up of transitory people it is impossible to find them all and secure a correct report. I spent three weeks with an average time of ten hours a day on seventy of the cases I have followed to give you this report.

I believe that in the suppurative cases, where the virulency has subsided, and you have pus remaining in one ovary, and the other ovary is good, you can safely take out the diseased ovary and leave the other without any danger of recurrence, unless there is a renewed infection or trouble following of an acute specific nature.

FURTHER EXPERIENCES WITH THE GILLIAM OPERATION FOR SUSPENSIONS.

BY
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At the sixteenth annual meeting of this Association, held in Chicago, in 1903, I presented a clinical contribution to the Gilliam operation, with a report of eighty-six cases as done after the method described by Gilliam, but with such modification as seemed desirable to me. At that time, I prefaced the report by saying that I wished to support and to carry along the knowledge of a really valuable and safe operative procedure and to do honor to its originator, a valuable and honored member of this Association.

We have now to record 783 operations. These operations were performed either by Dr. Charles L. Ill, myself, or by our staff of assistants. We thus have the records of more and less experienced hands, a valuable means of judging an operative result. Seven operators had from one to three operations each. We have had, among these, three deaths. Two occurred in the hands of one assistant, the other in our own hands, and this one died of pneumonia in about ten days.

In my former paper, I have reported a case of failure, as produced by an atrophy of the distal end of the round ligament. It was my opinion, at that time, that this was due to strangulation by the suture; and in all future cases but half of the loop of the ligament was to be fastened to the fascia with but two sutures instead of three. The result was that no recurrences of such character took place.

What recurrences there have been were exceedingly small and amounted to seven cases. The first case occurred in October, 1903. She was operated on again early in 1905, and in two succeeding examinations, in 1903 and 1909, showed that she was in perfect condition. At her second operation, it was seen that the ligament was very much attenuated.

The next case appeared in December, 1903, and four months afterward proved a complete failure. A second operation showed an entire separation of the ligament from the abdominal

wall. The ligament was very much thinned out at the location of the suturing. The second Gilliam cured her as was shown by an examination five years later, in January, 1909.

The third one was operated on in October, 1904, in a multipara, and already showed a relapse two months later. It was found that the adhesion of the round ligament had entirely separated from the fascia. A second operation was followed by cure.

The next case was recorded in a single woman in December, 1906, six months after the operation. No further operation was permitted.

The fifth case was operated on in June, 1905. In December following, it showed to be a failure. She was again operated on and three years later remained perfectly well. In this case, there seemed to be a marked attenuation of the round ligament.

In May, 1908, a failure has been recorded. This was a single woman, and although the uterus was not again retroflexed, it sagged so far toward the sacrum that there was no relief from the symptoms.

The last failure recorded was operated on four months ago, and a reexamination only a few days ago showed a complete failure.

Four of these cases were in our own hands, and three in the hands of the assistants.

All these failures showed a percentage of less than one. Of these, five were cured by a second operation; in two, no further attempt was made. It seems to me that if the operation had not been done on single, childless women, there would have been a perfect anatomical result.

I speak of this because operations in single women or those who have not had children, and where it can be shown that the condition is of recent date and possibly due to some injury, have presented the most frequent failures. For several years now we have not attempted operations in this class of cases, with rare exception. They have proven to be failures, both because the uterus would not stay up, for reasons to be spoken of later, or else they were not improved in their symptoms. For instance, Miss S. was operated on in May, 1906. Six months later she returned without any improvement. While her uterus was anteverted, it was very low in the pelvis. The uterus would not stay up because of a retroposition of the uterus, produced by short uterosacral ligaments. Most assuredly retroflexed uteri and

short uterosacral ligaments form the strongest contraindication for operation.

Of the 783 cases, 265 were uncomplicated retroflexions or versions. The rest presented themselves with various injuries of the vagina, cervix, and perineum, or pelvic inflammation. Fourteen had retrodisplacements with fibroid tumors. A myomectomy and Gilliam's operation cured these cases.

Now and then great difficulty was experienced in bringing up the ligament when there was great tension of the abdominal muscles or stiffness in the broad ligaments. At other times it was found that one ligament had not developed at all, and the other ligament was called upon to do its work. A case operated on in December, 1904, and which was reexamined and found cured in 1909, showed an almost complete absence of the round ligament on the right side.

The technic of the operation has not varied from what was published in my first paper, and consists of opening the abdomen in the middle line, just above the pubes. The round ligament on each side about 3 centimetres beyond the horn of the uterus is caught up with a strong silk loop. The recti muscles are now separated on both sides from their anterior fascia, until about half of each rectus muscle is exposed. A sharp-pointed forceps is now plunged through the rectus, its posterior sheath, and peritoneum, into the abdominal wall, and the round ligament drawn through this opening by the silk loop. The loop of the round ligament should be 1 1/2 centimeters in length and stitched to the posterior surface of the anterior sheath of the rectus with two chromacized catgut sutures, of a very fine character. The suture should be applied just tight enough to hold it in place, since the strongest kind of adhesion is formed from the fibroperitoneal contact. The ligament should be fastened to the sheath so the loop will turn downward. Closure of the abdomen by a layer suture finishes the operation.

We have no accidents to report as a late result of this operation. Miscarriages, dystocia, malpositions of the fetus, obstruction of the bowel, hernias, or disturbances of the bladder have been unheard of. Nor have any recurrences been reported, following labor.

There has, however, been one annoying feature, which I have spoken of in my former paper. Once in possibly a hundred cases patients have had pain at the site of the fixation of the ligament for some months, a condition which was very annoy-

ing to them. One single case had not recovered from this pain in over a year, after which she became pregnant and in due time the pain disappeared. I judge that the pain is due to an inadvertant adhesion of the tube to the abdominal wall and have exercised great care not to have such a fixation since.

I am not aware of any other operation that can give one a like gratifying result and which one can so freely recommend in cases which form no other contraindications, and where one can promise so much. The Gilliam has superseded, in our hands, all other operations including the Alexander Adams operation, of which we were so fond twelve and fifteen years ago, but which presented a great many more failures than are recorded by the suspension by the round ligament.

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A NEW SURGICAL PROCEDURE FOR RETRODISPLACEMENTS OF THE UTERUS.

BY

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In looking over the literature of retrodisplacements of the uterus, I have found sixty-one different operations or modifications of operations for its correction. Some other investigators give even a greater number—more than seventy.

That we have so many methods and that surgeons are daily trying to devise new ones, and are even recording several each year, are strong evidences that no method has proven sufficiently satisfactory to give it general acceptance. However, in dealing with many other morbid conditions of the uterus, less common than retrodisplacements, surgery has evolved for each a generally accepted procedure in which the underlying principles are so sound and the results so gratifying that the efforts of the operator to-day are directed chiefly to the improvement of technic.

The following sentence is from E. C. Dudley: "I believe that the surgical treatment of deviations of the uterus and associated pelvic organs is far from settled, so far, that perhaps some of the hysteropexies, the ligament shortenings, the suspensions, the fixations in their wide divergence may to the next generation look as crude and unscientific as the routine clamp and drainage tube in ovariotomy now look to us."

The doubt and uncertainty that still cling to this subject of retrodisplacements are incentives to discussion, to the thinking out and the trying out of new methods.

I feel that for the past two years I have been successfully practising what might be considered a new surgical procedure for retrodisplacements of the uterus. To discuss the principles on which it is based and to give the technic are the aims of this paper.

To-day it is proved by histologists, and quite generally accepted by anatomists, that the chief tissue of the so-called *uterine ligaments* is involuntary muscle.

E. P. Reynolds, in a recent article discussing this subject says:

"These muscles and their action are often visible in the course of operations on the living woman."

Daniel H. Craig, in speaking of the uterosacral ligaments says: "In fact there is so much muscular tissue in their composition as to make the designation 'ligament' a misnomer."

It seems to me that only during the past two years have surgeons begun to appreciate keenly the fact that these so-called "ligaments" are muscular in structure and in function and that they merit the same consideration and the same treatment when relaxed and overstrained, as do any other muscles of the body under similar conditions. This idea has found expression in modifying the underlying principles and technic of but few operations as practised at the present time. And before we can evolve the accepted operation of the future, we must learn to think of these structures as "elastic muscles with duties to perform," and a good start could be made at once by calling them *muscles*.

I have been able to demonstrate that these structures readily contract by the application of electrical stimulus, and we all know that the round ligaments, in particular, develop in pregnancy in proportion to the work demanded. These are phenomena that do not apply to ligaments under any circumstance.

There is no one, fixed, normal position of the uterus, but there are many positions within the range of normal. The position of the uterus, at any given time, within a normal pelvic environment is dependent upon the resultant of the forces of intra-abdominal pressure, of gravity, together with the coordinate pull of whatever muscles are acting at this particular time. The fact that the uterus does change its position within the range of normal from time to time, might be interpreted as nature's method of securing a degree of rest for these muscles in their apparent rhythmic action.

Excessive nerve stimulus from any pelvic lesion may cause tonic contraction of the muscular fibers of one or more ligaments of the uterus for a considerable period of time, depending upon the duration of the exciting lesion or the length of time before the tonically contracted muscle is tired out. Only under such circumstances can I imagine that these muscular bands exercise a ligamentous function, and then their action can only be interpreted as an effort to quiet and fix and thereby protect this all-important pelvic organ and its appendages.

No one ligament, or muscle, can normally exercise its seemingly

special function of keeping the uterus within a certain range of position without the assistance of all the other muscles. Any normal independent function exercised by a given muscle is dependent upon the normal coordination of the others. The plan of this natural coordination is interrupted at once by pathology or hereditary defects anywhere within the pelvis. Just as long as each of these muscles can meet the demand made upon it, just so long is the integrity of all secure, and no longer.

I wish to emphasize the fact, that in every acquired malposition of the uterus of whatever nature, not only one, but all the ligaments are concerned, as all are concerned in maintaining the normal position. And it must follow that in the correction of malposition by the surgeon, not only one, but all the ligaments should receive his attention. Moreover, if they are all concerned, if they have a common pathology varying only in degree, excited by the same lesion, it would naturally follow that they should all receive a similar surgical measure for relief.

Recent literature will bear me out in the statement that the uterus is but slightly suspended by any of its ligaments. It is true the peritoneal fold of the broad ligament passes from each side of the uterus to the lateral walls of the pelvis as high as the external iliac vein and thus may possibly exercise a little upward pull. While this ligament hardly suspends the uterus, it does give considerable support to it in quite another way. The anterior layer of the peritoneal fold of the broad ligament is vertical at its pelvic attachment, but as it passes inward, it gradually turns, so that when it reaches the normally placed uterus, it faces forward and downward to a considerable degree under the body of the uterus, thus supporting it on an inclined plane. The uterus cannot slide down, nor off, this plane, because it is fixed to it by dense connective tissue, but under many given abnormal conditions, it may be caused to descend by changing the incline of the plane to the vertical and then dragging the plane with it. The first step in a descensus, or in a backward displacement, is a change from the normal forward incline toward the vertical. The physiological incline is *directly* maintained by the muscular action of the round ligaments, the uterosacral ligaments, the broad ligaments, and the cervical attachments of the uterus, and *indirectly* it is maintained by intraabdominal pressure. Any impairment or modification of the supports or forces acting along these lines, if long continued, will change the

incline of the plane and thus soon be followed by displacement. Again, the weight of the uterus alone may be sufficient to cause the giving way of its support and muscles, if they do not undergo a corresponding development.

I believe that every displacement of the uterus with symptoms is a sequela, a secondary affair. If we cannot trace it as such, it does not alter the fact, but demonstrates our ignorance. I am sure we are all agreed that the treatment should begin by first correcting the exciting cause and thus making the displacement as expressed by Baldy, an incident.

The discussion of the exciting causes is beyond the limits of this paper, but after the cause has been removed, we will still have a displacement and it will ever remain so without the aid of the surgeon, occasional pregnancies excepted. But what is the pathological condition to be overcome now? The answer may be made in few sentences: Relaxed, overstretched, elongated muscles; muscles that have lost their highly specialized function of contractility and hence their adaptability to do work; muscles that now truly resemble, in their pathological state, what they have so long been called in their normal state, "ligaments" but poor ligaments, for they readily stretch and yield. The pathological changes I have described in the muscles attached to the retrodisplaced uterus apply to all in a degree, but affect the round and uterosacral ligaments the most. It is a recognized fact, frequently demonstrated by the practical experience of the surgeon, that such pathological changes in muscles wherever situated in the body, are best corrected through nature's simple therapeutic measure, rest. When a fairly normal blood and nerve supply are intact, the low grade of connective-tissue formation, ceases through rest, and its absorption soon follows. The delicate spindle-shaped or ribbon-like fiber cell of the muscle may undergo marked atrophy, but so long as the integrity of its nucleus is conserved, it will still have inherent power of regeneration. After regeneration has been attained through rest of function, development will soon follow through physiological exercise of function. Rest is the all important factor in this process and it certainly could never be attained by turning or twisting and pulling a muscle, or by changing its relative position and at the same time giving it more work to do. These are the very causes that brought about its pathological condition.

The involuntary muscle wall of a chronically overdistended urinary bladder readily contracts by means of the rest secured

by drainage. The same applies to the stomach. Dilatation of the heart yields to no other measure as well as to relative rest.

Anatomically the so-called "uterine ligaments" are muscles, hence their function as planned by nature must be that of muscle. Their coarse pathology in retrodisplacement of the uterus is that of overstretched muscles and hence their treatment should be that for overstretched muscles, rest. I feel that the desired rest can be attained best, with little trauma, by the introduction of an artificial round ligament of kangaroo tendon. This may be made to rest, not only to the round and the uterosacral ligaments, but the broad ligaments as well, when necessary, by making the attachment of the distal end a little higher to the abdominal wall than that of the normal ligament and the proximal end, a little lower to the uterus than the normal ligament. After a trial of various other suture materials, such a chromicized catgut, fascia, and silk, I found the kangaroo tendon the best. Kangaroo tendon retains its tensile strength for a longer period of time than is necessary for these muscles to retain their tone and function. In this respect the following from Ochsner, writing of his ventrosuspension operation, is of interest: "This temporary ventral suspension (with catgut) will give the round ligaments an opportunity to contract and regain their tone and, when the time comes they will be capable of performing their duty in giving the uterus its proper support, especially as the uterus will now be free and will soon regain its normal weight."

William Alexander is of the opinion that the uterus has no tendency to retrovert at the end of three weeks.

The operation I am doing is simple and is as follows: After finishing all other work in the abdomen, I pick up the round ligament with a small volsellum or forceps. Gentle traction will make the ligament taut and thus direct the finger to the internal abdominal ring. With the finger outlining the ring, the arched fibers of the transversalis muscle can readily be felt above. At this point, just above the tendon of the round ligament, a suture of whatever material determined upon is introduced on a curved needle, from below upward, sufficiently deep to secure a good bite of the transversalis muscle. This suture is now anchored and will include peritoneum, transversalis fascia and muscle. External pressure over the internal ring will facilitate this step of the operation. The peritoneal coat of the distal end of the round ligament is now pierced and a continuous suture, subserous chiefly, is run parallel with the round ligament up to

1/4 inch of its uterine attachment. The broad ligament is then pierced a short distance from the uterus beneath the ovarian ligament. This ligament may readily be included in the suture in such a way as to take up its slack, if prolapsus of the ovary is present. The needle is then made to enter the posterior wall of the uterus just beneath the serous coat, passing slightly downward and inward to the median line. This procedure is carried out in like manner on the opposite side. The two free ends of the suture are now tied with a single knot and sufficient tension is made to produce the degree of anteflexion required. The knot is now made secure. This procedure was first introduced as a supplement or reinforcement to some of the recognized operations for shortening the round ligaments and only for the past two years have I used it alone, unassociated with any other operation. The first eight cases were in women after the menopause, or in women from whom I removed the ovaries or tubes, or both. Silk was the suture material used and the results have proved most satisfactory in all. About fourteen months ago I began the use of kangaroo tendon and applied the operation to women in whom future pregnancy might be expected. Again, the results have proved most satisfactory. At the present time, in practically all cases, kangaroo tendon is the suture used. Sixteen consecutive cases operated on from four to fourteen months ago, bear convincing testimony of the merits of this suture and the operation. No relapses, no sequelæ, and yet most of the operations were performed in the free department of the Samuel Merritt Hospital, upon "working women" in whom straining and lifting are essential factors in their daily work.

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DISCUSSION ON THE PAPERS OF DRS. ILL AND BUTEAU.

Dr. Albert Goldspohn, Chicago.—I am glad to be able practically to second everything that Dr. Ill has said, although my experience with the Gilliam operation, the modified operation, that I do is not so long in duration, yet it is an operation I have done in about 100 cases each year for six or seven years. The operation that Dr. Gilliam does, I think, is different from the one that I do, but I am willing to give him credit. Every man has a right to make modifications to suit his own ideas. I draw the uterus up more firmly so as to touch the abdominal wall, and in drawing up the loop of round ligament I take with it the peritoneum enveloping the same, in order to support or re-enforce its muscle. We must bear one principle in mind, namely, that muscle anywhere in the body will not stand constant tension, and it must be re-enforced by efficient structure, usually fasciæ. We find that this obtains everywhere, as in the perineum, or the abdominal wall. Therefore, the round ligament is only a part of it, and with it, enough of the broad ligament peritoneum is taken to make the structure sufficiently strong to be durable. By being drawn up in that manner it occludes the space where the bladder lies beneath the structures. The intestines thereafter do not enter, and with this technic there has been no intestinal obstruction, no trouble from the intestine becoming incarcerated between the uterus and the abdominal wall, so that the idea of occluding that space by some special device or technic in connection with the operation is not necessary. This method of operating is possible with all kinds of cases, even where there is a good deal of inflammatory infiltration. While the technic of Dr. Barrett and Dr. Montgomery of Philadelphia, and Dr. Noble, and the Mayos and others, which is sometimes termed an internal Alexander operation, where the ligament is taken and drawn into the abdominal wall at about the point where the internal abdominal ring is—this requires so much splitting, so much severing of tissue, so much mutilation, which is not possible in cases where there has been a good deal of inflammatory infiltration. An operation after the Gilliam type is simpler than are the other methods, no matter how much theoretical objection there may be to it. They cannot do in many cases what we can accomplish with the Gilliam or modified Gilliam operation.

The second speaker embraced a principle in technic which is positively fallacious, namely, that the round ligament will under all conditions recover itself by rest. That is not true. It is true only when the opportunity for rest is given the round ligament immediately after or within a limited number of weeks after a childbirth when involution of the uterus is not yet completed, or when it has been arrested or delayed by injury, infection or by retroversion, we can then re-invoke that physiological process by getting the uterus in position and giving the round ligament rest. Under these conditions alone will the round ligament retract. It does not do it under ordinary conditions, otherwise it would recover itself with pessary treatment which practically cures no one.

Dr. Rufus B. Hall, Cincinnati.—I did not hear all of Dr. Ill's paper, and therefore I will not attempt to discuss it; but in reference to the technic of the Gilliam operation or its modification, I am willing and anxious to give Dr. Gilliam credit for his invention of this operation, and in all my records where this operation is done I mention the name of Gilliam. What I say will not have any reference to Dr. Gilliam. I made the Gilliam operation within twenty minutes after I read his first description of it in a medical journal. It impressed me as an operation that was better than anything that had been described previously. I did a dozen or more typical Gilliam operations, but theoretically there was a defect in the technic of the operation. In splitting the muscle, going through, picking up the round ligament, pulling it through the outer end of the ligament, leaves a space between where you puncture and carry it up through to the external or internal abdominal ring, there is a piece of peritoneum resting against peritoneum which leaves the possibility of a strangulated intestine. Doubtless there are some present who can recall an early paper from me opposing the fixation of the uterus forward on account of intestinal strangulation following. At that time I reported several cases, and I assume there were several unreported deaths from that cause, because I had two or three in my own neighborhood that had been unreported, and are still not reported. I gave up fixation of the uterus early in its history for that reason. I abandoned the Gilliam operation for the same reason that there is a possibility in the technic of the operation that might cause that accident. In other words, there is a defect in the technic that ought to be overcome. After I made a few operations I said I could overcome that defect easily. After separating the space for an inch and a half or so back on the fascia, splitting the fascia then with a crooked forceps through a narrow opening in the fascia with an instrument which I especially devised, I found I could slide along over the muscle, and by putting traction on the round ligament with the hand inside, you can pass the forceps over the top of the muscle to the internal ring, and you only have peritoneum between the point of the forceps and

finger. Force the forceps through into the abdomen. Then you take the ligature and pull the ligament through; with this you pull the ligament through the opening from the internal ring over the muscle back to the point where you want to fix it, then you take all of the outer end of the ligament and pull it through and fasten it, then you have a ligament that is a splendid round ligament *that extends from the uterus to the internal ring* where nature fixed it, and you have a longer piece of round ligament. You can put the uterus in any position you want. I do not carry the uterus as far forward as was mentioned by Dr. Goldspohn. I think the nearer normal you can place it, the less likelihood there is of a dragging sensation. If you get it too far forward it is likely to cause a dragging sensation for months along the line of suture. That is the modified operation I have done and followed since Dr. Gilliam read his paper. I am pleased with it. I have a dozen patients who have borne two or three children after this operation had been done upon them, and it stands the test of child-bearing. As Dr. Goldspohn has said, that is the test in these cases, namely, whether the uterus will stay forward or not after childbirth.

I want to commend the author of the last paper for his work along original lines, but whether it will stand the test or not I do not know. If it does, I shall be one of those who will use it.

Dr. J. Henry Carstens, Detroit.—We do not strengthen the ligaments by resting them. We do not strengthen a muscle by resting it. The experts in physical and manual training and prize fighters strengthen muscles by exercise. You must exercise these muscles if you would make them strong, and that is the reason why fixation temporarily holding the uterus up does not strengthen or restore the muscle except as Dr. Gilliam says. If he takes a silk ligature and brings the uterus forward and uses that as an artificial ligament, it is all right. If he uses kangaroo tendon, it will by and by become absorbed and disappear. Dr. Marcy, when he made his original investigations, claimed that kangaroo tendon remained and became a part of normal tissue, but later he took that all back and said it was entirely absorbed. If you use kangaroo tendon for the purpose of bringing the uterus forward and the kangaroo tendon holds it for a certain length of time, by puckering up you will find the whole thing goes back. You cannot restore the round ligament or keep the uterus in place permanently in that kind of way. You must make use of all of these methods. Every one of these operations are good, because every case is different. The operation must be adapted to the particular case in hand.

Dr. Herman E. Hayd, Buffalo.—I have followed the work of Dr. Ill in this Association for many years, and what he has had to say about the Gilliam operation I heartily endorse, and particularly that part in which he speaks of doing a modified operation, sewing the lower flap of the ligament to the inner surface of the abdominal wall, practically bringing back the

internal abdominal opening, the exit of the ligament, through the abdominal wall, an inch and a half, and in that way overcoming the possibility of a sac. With the original Gilliam operation the lower part of the abdominal cavity was divided into three distinct chambers, and if we have not had obstruction of the bowel, we are going to get it sooner or later if we make three cavities instead of one. There is no question about that. All so-called intraperitoneal operations are in the great majority of cases, I believe, reasonably satisfactory, providing we use nonabsorbable ligature material. There is no question that Dr. Carstens is right in the statement he has made. I have had the uterus after a Gilliam operation fall back when I sewed the ligament with kangaroo tendon, and I always stitch it now with Pagenstecher linen. I am glad to have heard what has been said because I have discussed this subject for so many years and have written so much upon the Alexander operation, and I shall not permit myself or members of the Association, if it is possible, to lose all the enthusiasm we have had in favor of the Alexander operation for these new methods that have been coming out from year to year. Those of us who have done 100 or 200 or more Alexander operations in properly selected cases, and have seen the women bear two and three and even four children, the ligaments standing the test of pregnancy, and the uterus remaining in place, do not feel like giving up the Alexander operation. It is an extraperitoneal procedure. I will not, nor do I believe that other men are willing to do so. I spoke to Dr. Ill, and I asked him if he had given up the Alexander operation, and he said he had, and it was that statement that brought me to my feet rather than to criticise the Gilliam operation. However, I maintain that he is not right, in an uncomplicated case of retroversion of the uterus to open the abdominal cavity. If this operation were done upon his wife or his sister, he could not tell how soon the patient was going to get obstruction of the bowels as the result of adhesive peritonitis. He does not know when he is going to get adhesions when he opens the belly wall. Perhaps you do open the peritoneal cavity slightly on two sides when you pull out the round ligament, but this opening is so small no harm results. You simply unshelve the ligament, and the peritoneum retracts around it, and inside of six hours the peritoneal cavity is closed with its adhesions. I cannot help but feel, gentlemen, that if we are going to accept these recent ideas, that it is not possible for us to differentiate between complicated and noncomplicated retroversions of the uterus in the great majority of cases, what is the use of a special society like this. I should feel ashamed if most men could not make a diagnosis of an uncomplicated case of retroversion of the uterus. True, sometimes it is difficult to make the diagnosis, and in a few cases we are perhaps going to fail to do so. In cases of noncomplicated retroversion, and there are lots of them, where there is no tubal or ovarian involve-

ment, the Alexander operation is most satisfactory and I look upon it as an ideal surgical procedure in that restricted class of cases.

If we are going to accept recent ideas, that every tender spot in the right side is appendicitis or gall-bladder, then, of course we are going to open the abdomen and forget the Alexander operation, because we are operating to look at the appendix or gall-bladder or feel for a floating kidney, and not to correct a retroversion. I think we are getting crazy on this subject, and altogether too many bellies are cut open for diagnostic purposes.

Dr. Roland E. Skeel, Cleveland.—I would like to call attention to what I consider an inherent defect in all operations which shorten the round ligaments through the inguinal canals. The occasion for suspension of the kidney, suspension of the colon and suspension of the uterus arose from the fact that the human female assumed the upright position before the necessary supporting structures were evolved: A fact which I think we will all recognize if we will stop to consider for a moment and especially if we will reflect on the significance of retroversion and retroflexion in virgins and nullipara. If we look at a longitudinal section of the uterus we will appreciate that any operation which shortens the round ligaments through the inguinal canal carries with it the inherent defect that the pull upon the uterus is anterior to its midline, at the point of normal attachment of the round ligaments, and this continues the mechanical defect which was at least partially responsible for the original malposition. Whereas if we split the broad ligament on either side, draw the round ligaments through this opening and stitch them together behind the fundus the uterus is thrown sufficiently forward so that intra-abdominal pressure tends to maintain it in its proper position.

This so-called Baldy-Webster operation contains one serious defect however in that if one fails to close snugly the opening in the broad ligament through which the round ligament is drawn a Littre hernia with strangulation of a nipple of intestine may occur. Such a disaster I reported as having happened to one of my patients and I have no doubt that unreported cases have occurred. In spite of this the operation is mechanically correct whereas all operations which draw the uterus from a point anterior to a median line are mechanically incorrect. If nature had done her work correctly in the first place we would be under no necessity for correcting malposition of the uterus or the kidney, but if we must let us not follow nature in her failures.

Dr. Francis Reder, St. Louis.—There is another serious feature in regard to the operation devised by Dr. Baldy, and it seems to me to be a serious feature with all of the methods where the artificial attachment of the broad ligament is made to the uterus. The operation of Mann and Tait has some risky features. In drawing the round ligament through an opening made in the broad ligament and attaching it posteriorly, there is great danger in attaching the ligament throughout above the center of

gravity, particularly where the uterus is attached below. As a result, for instance, when during the menstrual function this organ becomes engorged, the attachment may either draw the uterus too far forward, or it will create a more serious condition than the one that existed before the operation. For that reason, it is not to be recommended that the artificial attachment be made to the uterine body proper.

The other operations to which we have listened are the more preferable ones, but we lose sight of the factor that we have to have some sort of support from below, and a proper perineum will give you the pressure that exists, which is such an important factor in the success of the operation in enabling you to give proper rest to the tissues after the Gilliam operation or any of its modifications. The Gilliam operation, as first described, has led me to operate on two cases for strangulation of the intestine, consequently it has made me very diffident, and unless I can do the operation in a modified way, I would rather not perform it at all on account of the serious consequences that may occur from intestinal obstruction.

Dr. H. W. Longyear, Detroit.—I did not have the pleasure of listening to these two papers, but I rise principally to support Dr. Hayd's contention in regard to the Alexander operation. I have had considerable experience with that operation, performed by the modified, blunt-hook method, as many of you know. I look upon it as the ideal procedure for correcting a retrodisplacement of the uterus of a noncomplicated character. There is no question in my mind about its efficiency. It would seem unnecessary and foolish to resort to an operation, in the place of it, which, according to the previous speakers, is so dangerous, and which some of the gentlemen here are now using. These dangers have been pointed out by the advocates of the method, and different makeshifts recommended to avoid them. So, as I said, it seems to me a foolish thing to do an operation of that kind when the other can be done so easily and in such a simple way, leaving the round ligament in its normal position, performing its function in the most efficient manner and without danger to postoperative complications.

I wish to congratulate Dr. Hall upon his advance toward the correct point in this operation. He has now advanced the round ligament to the internal ring where it belongs. Some years ago I tried to make a convert of him to the Alexander operation, but apparently without success. My principal reason for recommending the shortening of the ligament in the inguinal canal is that it brings the ligament through the internal ring where nature meant it to come, and I see now that Dr. Hall is switching it over there, by dragging the abdominal loop through the internal ring by the Gilliam operation which he tells us he now uses.

Dr. James E. King, Buffalo.—There are two or three points I want to speak of. The first one is in reference to the natural supports of the uterus. When we assume that the round liga-

ment is one of the principal supports of the uterus in the non-pregnant organ, I believe that we are making a mistake. When we observe the uterus in its normal position during the progress of an abdominal operation, we cannot help but be impressed with the fact that in many instances where the uterus is in perfect position, the round ligaments apparently play but little part in holding so. Personally I believe that the main support in holding the uterus in proper position is the cellular tissue at the base of the broad ligament.

So far as the uterosacral ligaments are concerned they are no doubt factors in maintaining a proper position, and at one time I was an enthusiast in operations upon these ligaments in the correction of retroversion. The most satisfactory results, however, are obtained by the utilization of the round ligaments and of all the operations upon these ligaments the Gilliam operation seems to give the most uniform results.

There are one or two points in the technic of the operation which I have used which in my hands have been very satisfactory. The first is the use of the transverse incision. The second is an expedient that was suggested to me by having to reopen a case upon which a Gilliam operation had been done by another operator a year previous. On opening the abdomen I found the round ligaments, which had been pulled through the muscle and sewed to the fascia, spread out in a fan-like arrangement, so that the uterine, fascial and abdominal wall attachment formed a V. That suggested the advisability of uniting the uterine and abdominal end of the ligament by a suture of linen. The ligament is thus shortened intraabdominally, it gives a well-formed ligament to be drawn through the muscle and it takes the strain, to a certain extent, from the part of the ligament united to the abdominal wall. With the transverse incision the round ligament is simply sutured to the underside of the fascia with the linen sutures that unite the fascia in closing the abdominal incision.

Dr. Albert Vander Veer, Albany.—I would like to say a word or two on these papers that have been presented. It warms the heart of an old man like myself, who was educated in the school of pessaries, to look back to the days of the use of Thomas pessaries and how they were used at that time in cases of retroversion of the uterus, and then observe what changes have taken place since that time. I was among the very first to open the abdomen for the purpose of relieving these cases of retroversion of the uterus. I have tried all the different operations. I have tried the operation of Polk, Mann, and other operations, but I have not followed the Alexander operation to a great extent. I must say, however, that of all the different kinds of operations, I have found the Gilliam operation to give me more satisfaction than any of those I had done previous to its introduction.

The paper of Dr. Ill is valuable for the reason that it gives us a summary of statistics, and it is upon such statistics as these that

we must rely in drawing conclusions in reference to any particular method of operating.

As to the paper read by Dr. Buteau, I should like to read it and think it over very carefully, because I believe there are some points of considerable interest in it.

Dr. Skeel spoke of the erect position of woman. I believe in that very much. When I perform the Gilliam operation, I get the uterus up pretty well in front, and when that is done I do not have any serious complications. At least, I can truthfully say that these cases have not come back to me, and I can heartily endorse what Dr. Ill has said in his paper. Of the various operations, I have found the Gilliam operation to be the most satisfactory in my experience.

Dr. William H. Humiston, Cleveland.—I have had quite an extensive experience with the Gilliam operation, having performed over 300 cases. In all of the cases I reported yesterday of resection of the ovaries the majority were for retroversion of the uterus, and the Gilliam operation was done. I have had the privilege of examining seventy cases following confinement after operation. They were not all Gilliam operations, and in but one case did I find the uterus retroverted after delivery. The Gilliam operation is so easily performed and is so satisfactory, I do not see how it can be well improved upon in after-results. As to the Alexander operation, I did it for some time. In a great many of these cases I made the Alexander operation, but I did not relieve many of the patients, and in the majority of cases I have had to go into the abdomen for other conditions I had to correct, such as resection of the ovary and adhesions, conditions one would not detect when he did the Alexander operation. The Gilliam operation gives you an opportunity of examining the appendix and other organs, so I do not have any use now for the Alexander operation. The Gilliam operation is perfectly safe, and you can do all the other work that is necessary to do with the abdomen open. In a great many cases you cannot make a correct diagnosis by bimanual examination especially where the patient has a thick abdominal wall.

Dr. Ill (closing the discussion on his part).—The Adams-Alexander operation is ideal. I agree with Dr. Hayd about that, and I hesitated very much before giving up the Alexander operation. It was only after an extended trial with one of the other methods that I gradually left it, and did this modified Gilliam. Nobody can say that the peritoneum must not be opened with an Alexander operation. The uterine end of the round ligament presents severe adhesions between the peritoneum and muscular tissue, and in pulling the round ligament out of the peritoneum, this will often tear.

With regard to the operation described by my friend, Dr. Hall, it seems to me he makes an infundibulum of the peritoneum there. If you will take the trouble to look up the cases in which the Simpson operation was done, or for that reason, any operation

which draws the round ligament through the internal ring, you will find that an infundibulum has been formed by the peritoneum, thus subjecting the patient to a subfascial hernia.

The operation on the uterosacral ligaments has been a decided failure, not only because it rarely keeps the uterus up, but because it produces sensitive and painful scars. Anyone who has done that operation repeatedly, and who has followed cases that have been thus operated on, knows that the uterosacral ligaments become sensitive, and coition and straining at stool, painful.

Dr. Buteau (closing the discussion).—The statement has been made that the operation I have described will not hold the uterus in position. Experience or experiment is a better teacher than theory. I have tried it. I have tried it without prejudice, and I have had others try it without prejudice and it does hold. Now, I would ask you to fit your theory accordingly. As to the fact that the rest of a muscle does not develop it or strengthen it, I agree with you, but I do claim that rest is the first stage of developing any overstrained and relaxed muscle, and you cannot prove otherwise. I would like to refer you to an example I made use of in my paper, and ask any doctor if in the treatment of a broken compensation of the heart from dilatation he would ask the patient to continue to exercise *more* in order to cure or help the condition of the heart. Does he not need to rest the heart for a time and later begin to exercise it systematically? In the case of overstrain of the ciliary muscle, would you ask a man to take his glasses off and to use this muscle more? Rather would you not urge him to put glasses on, and perhaps colored glasses, and tell him not to use his eye, but give the muscle rest, and ask him to continue it? The first stage, therefore, of helping an overstretched muscle is rest, and then function afterward.

Dr. Alexander in his earlier operations, I do not know what he is doing now, advocated the use of pessaries for three weeks after his operation, and at the end of that time found the pessary was no longer necessary as the round ligaments would hold. The operation for retroversion is not primary, it is a secondary affair and is incident to something else. There is not a constant pull upon the round ligament if you have corrected the pathology, and it is not intended by nature that there shall be a constant pull on the round ligament. If you restore the uterus to a normal position, you have a condition very much as nature intended without a constant pull upon the round ligament.

Dr. Goldspohn.—How many of your cases have stood the test of pregnancy?

Dr. Buteau.—I am glad you asked that question. Three or four years ago a young lady from Seattle presented herself at my office, who had undergone an operation for a possible indirect inguinal hernia, and during the operation evidently both round ligaments were cut because on opening the abdomen I found them severed and the cause of the retroversion. I then picked

up the round ligaments and found them greatly retracted within an inch and a half of the attachment to the uterus. Both had been severed, and as a result we had retrodisplacement of the uterus. I took these round ligaments and attached their cut ends with silk, in the form of a mattress suture, and anchored the distal ends of the sutured ligaments to the upper part of the internal ring of the abdominal wall and continued the suture, subserous parallel to the ligaments, to each horn of the uterus, thus making two artificial ligaments of silk and then sent her home. She became pregnant, and about eight months afterward I delivered her of a child at full term without any trouble. I saw her six months ago and the uterus was in good shape, in a normal position. This operation holds the uterus in position I think, because the round ligament has the assistance of the utero-sacral ligament, and in the operation that I have discussed this morning it is thought that it gives both ligaments rest and support for a time. I do believe this is so. If the uterus is in a normal position, there is no constant tension put upon the round ligament. It is only possible when there is straining, when there is an overdistended bladder or rectum, or something of that character. If you remove the pathology in the pelvis and keep the uterus in position for four or five weeks, I claim that with this operation it will stand. I have tried it. It does stand. It may not be all that I feel it is. Often surgeons who practise a certain operation become intensely interested or may be overenthusiastic in regard to it. I have asked others to try out this operation, and I have not been discouraged by their reports. I could report fifty cases in the practice of others, and I wish you would consider the operation seriously, and apply it in place of those operations that are not quite satisfactory to you. It, at least, will act as a reenforcement to the plastic work of other operations upon the round ligament, if you prefer any other method.

SOME DIAGNOSTIC PITFALLS IN ABDOMINAL SURGERY.

BY
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A NOTED preacher has said that prayer is autobiography. Be that as it may, in praying for indulgence to-day I confess that most of the blunders I am to warn you against are those I have made myself, some of them many times over.

The most important part of surgery is diagnosis and it is the hardest part to master. He who professes never to err in his surgical diagnosis does not know the truth. Some of the ablest men in the country often put question marks after their operative notices and the rest of us would be less frequently humilated if we did the same. The best men are not those who make no mistakes but those who make fewer than their fellows. Last fall at the Congress of Surgeons of North America at Philadelphia I heard one of the most famous diagnosticians in the country lecturing in conjunction with one of our ablest surgeons declare to a crowded amphitheater, having on its benches Drs. Mayo, Ochsner and Murphy, that a certain border-line case was undoubtedly pyloric obstruction and he gave convincing reasons why it could be nothing else. The surgeon concurred in the diagnosis, opened up the abdomen and three fingers slid through the pyloric orifice with the greatest ease. This was a bit embarrassing but the next case was confidently declared to be one of gastric ulcer, for the man had vomited pints of blood at various times and had all the classical symptoms and both the famous men proved it conclusively. Again, the abdomen was opened and there was no ulcer but a cirrhosed liver. Another well-known surgeon undertook to show us his method of doing an hysterectomy but found on operation that he had a normal uterus with a large ovarian cyst to deal with. When we go to some great clinic and see these things, and we see them whenever we go, we are greatly comforted, and at the same time our judgments of others grow gentler and our bump of self-esteem tends to diminish.

A few of the mistakes we are likely to make in doing abdominal surgery we will now consider.

Beware of diagnosing cholecystitis in the young. They rarely have anything the matter with their gall-bladders. When a boy or girl complains of pain in that region, with fever, tenderness on pressure and rigid muscles, look out for central pneumonia with diaphragmatic pleurisy. Watch the fever. It will be more regular and less of the intermittent type, the pain will be steadier and while there may be no cough nor increased respirations nor any pulmonary symptoms, just wait, and wait patiently for even five or six days if need be, and then the chances are the physical signs of a pneumonia will appear.

In this connection it may not be amiss to call attention to the danger of confusing a beginning pneumonia, especially in children, with appendicitis. The lower intercostal nerves have branches which run down to the skin and muscles of the abdomen, and irritation within the chest is felt in the terminal filaments of these nerves in the region of McBurneys' point giving rise to pain, tenderness and rigidity in that region. When pnuemonia is present there is apt to be a higher fever at the beginning than in appendicitis, increased respirations and a higher leucocyte count. The main point to bear in mind is always to make a careful examination of the chest before diagnosing appendicitis in children.

It would take us far beyond the time limit of this paper to attempt a complete differential diagnosis of appendicitis, but there is one condition that I believe it is impossible to diagnose from the chronic type of the disease and that is the so-called Lane's kink. The symptoms warrant operation, however, and if we will always examine the ileum just before it enters the cecum and loosen any bands that may constrict it we will have more uniform success in our results. We have all taken out so many healthy appendices in the neurasthenic and probably will do so again, that we can afford to spend a moment considering this topic.

We know that there is no symptom nor set of symptoms under the canopy of the heavens that nervous women may not get. Nearly every one of them knows the location of the appendix and the cardinal symptoms, and autosuggestion does the rest. Even those of us who have phlegmatic Dutch dispositions recognize the power of the mind over the nerves. By concentrating my mind and willing to have a pain come in my finger I can very

quickly make it ache so hard that I have to rub it briskly to stop the pain, and I can conjure up a real toothache or toeache in the same manner. Much more a morbid woman under the dread of appendicitis but with no intention of doing so, sets going a train of nervous influences which will deceive not only herself but the surgeon as well unless he is most careful.

Pain over the region of the appendix will be present, aggravated by motion, tenderness on pressure and rigidity and sometimes even a degree or so of fever. Of course it is the subacute type that we are liable to confuse this with. But a careful examination of the abdomen fails to show the restricted respiratory movements on the right side that we get in the real thing. We have not the same anxious expression of the face and if the patient's attention is sufficiently diverted we can palpate the organ without eliciting complaint provided we have warm hands. This seems like a small point but cold fingers irritate the terminal nerve fibrils in the skin and these convey the irritation to the deeper branches in the rectus and that muscle immediately becomes rigid, when with warm hands no such reaction would occur. Above all get the nervous history in suspected neurasthenic cases, and once convinced there is only a nervous pain present be brave enough to refuse operation, for removing the appendix will not remove the pain.

Before leaving the subject of appendicitis there is one class of cases that to me has been most baffling to diagnose. I refer to the disease as it occurs in young children from two to six years of age. While writing this paper and while my mind was on the subject of appendicitis, I attended a boy of six years for three days, examined carefully several times for any evidence of the disease and made the diagnosis only at the end of that time when the inflammation had made great progress. He had initial vomiting, transient pains through the abdomen, mostly in the left hypochondriac region, absolutely no tenderness on pressure, no rigidity, passed large quantities of mucus following a cathartic, temperature at no time over 100°. The pulse was rapid, running around 120 but all this time no tenderness whatever over the appendix. But in twelve hours after pain first appeared in the appendix, accompanied with tenderness and rigidity, the appendix was found full of pus, large bands of lymph were binding it to the intestinal walls and the omentum in its protecting care was firmly adherent. There must have been inflammation

in the appendix long before any of the cardinal symptoms appeared.

And this is not the first time I have been deceived in precisely this same way. Catarrh of the colon with the passage of large quantities of mucus should not divert us from a rigid examination of the appendix. Overeating, with gastric and intestinal disturbances in its wake, is so common in children that we are prone to overlook a graver condition back of them, but speaking for myself I cannot always diagnose the appendicitis even when I am looking for it. I believe the absence of diarrhea in these cases should make us strongly suspicious of the appendix.

As for the digestive symptoms that come from chronic appendicitis, their name is legion. Stomach specialists would lose half their trade if every chronically inflamed appendix were removed, and numerous patients would be spared the discomfort of the stomach tube, the annoyance of swallowing sundry cunningly devised dippers with their long and supposedly telltale strings, and the vexation of living on a diet which affords them no relief. In every case of intractable dyspepsia unless we can satisfy ourselves as to its cause we should suspect the appendix even though no marked local symptoms have appeared in that region.

Reverting to the subject of neurasthenia, just a word about floating kidneys. We frequently find these two conditions in the same patient and we used to jump to the conclusion that the movable kidney was the cause of nervousness and we hitched the kidney fast enough but the nerves kept up their antics just the same. I am afraid to give any estimate as to how many women have movable kidneys. The statistics I have seen are only confusing from the vast variety of percentages recorded. But I do venture the opinion that the majority of women who have movable kidney have no symptoms whatsoever arising from this condition. If in one of these cases there are severe paroxysms of pain due to kinking of the ureter or of the pelvis of the kidney, and during these attacks of pain or just afterward marked urinary changes occur then we are warranted in fastening the kidney. Morris has recently called attention to the valuable diagnostic point that when a floating kidney is causing trouble there is a splint-belly rigidity of the muscles overlying the organ, on the same principle that the rectus protects an inflamed appendix.

It seems only reasonable that a moderate amount of nephrop-

tosis should be harmless, just as a moderate sagging of other viscera gives rise to no unpleasant symptoms. We hear a great deal in these days of visceroptosis, and bismuth paste and *x*-rays have made possible a fairly accurate diagnosis of these conditions, yet I believe it is a fashionable fad to assign all sorts of symptoms that we can't easily explain otherwise to the sagging of a colon or the descent of the stomach. If we used up some of our gray matter we would often find a scientific explanation more in accord with the facts.

Not that *x*-ray findings are not valuable aids to diagnosis. But it is when those findings are positive that they are of greatest value and it is most unsafe to abandon a diagnosis because we can't prove it by the *x*-ray. For instance, I have seen gallstones beautifully nested in the gall-bladder in an *x*-ray picture but they had lime salts in them. The common type of bilirubin and cholesterin varieties would not show. Likewise in diagnosing stone in the kidney, ureter or bladder, a pure uric acid concretion would not show at all while a phosphatic stone or one containing oxalate of lime would cast a dense shadow.

I am not prepared to say that Dr. Cole, of New York, is wrong when he claims that he can diagnose gastric ulcer and beginning carcinoma of stomach with his weird light, but I am prepared to say that I have had my own diagnosis of pyloric ulcer upset by the *x*-ray, even when I could back it up by such symptoms as persistent hyperacidity, pain coming on two hours after food and lasting for two or three hours, relieved by taking alkalies or ingestion of more food, and accompanied by fermentation and exquisite tenderness over a spot in duodenum.

Not only did the *x*-ray upset my diagnosis but it gave a picture of general adhesions between stomach, liver, colon and omentum, showing pyloric narrowing from bands, and operation with subsequent recovery following the loosening of the bands, has proven the correctness of the diagnosis. I believe that symptoms of gastric ulcer with pyloric stenosis are simulated oftener than we think by adhesive bands flattening out the duodenum, these same bands originating from a gall-bladder infection or even from as remote a source as the appendix.

In every case of intestinal obstruction thoroughly inspect all the hernial outlets. Frequently a small knuckle of gut, so small as to escape detection from a casual look, gets caught in one of these places, gives no pain at the point of constriction perhaps, but causes epigastric distress, and unless we examine carefully

the hernial exits we may mistake the site of the trouble altogether.

Many a case of pelvic tumor has an illuminating light thrown on its character by the use of a catheter. Never be afraid to use this important diagnostic and therapeutic instrument.

We are constantly reminded in these days of the need of remembering the decalogue. As a matter of fact we all know those ten laws and yet from the pulpit and the platform and the press we are told how we fail to keep them. There are certain diagnostic points, among them these I have presented to you to-day, that are known to us all and yet it does us no harm to be told them again. Every golfer knows he should keep his eye on the ball, yet if his caddie tells him to do it at about every second stroke he makes a better score. It is in the hope of improving our score that I have presented this very imperfect and fragmentary account of some diagnostic pitfalls in abdominal surgery.

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DISCUSSION ON THE PAPER OF DR. HEDGES.

Dr. J. Henry Carstens, Detroit.—The author of the paper ridiculed the examination of the stomach by the silk thread, but I think it a valuable means for diagnosis. When you have a case of ulcer of the stomach or duodenum, you can often verify the diagnosis and locate the site of the ulcer by noting the position of the blood stain on the silk thread.

Dr. William Edgar Darnall, Atlantic City.—Dr. Hedges has called our attention to some valuable points in his paper. They are practical points. It is quite important to make a differentiation between pain and tenderness. Tenderness is perhaps a little more reliable than pain as a symptom for locating the trouble. We know how elusive pain is. Human nature is the same all over the world. Up to the time we became surgeons we felt perhaps very much as these patients do, namely, that the point at which the greatest pain is felt should be considered as the location of the trouble. It took us a long time to unlearn that and to be impressed with the fact that oftentimes we have a series of symptoms that go to make up a certain condition, and the location of the pain may be the least important of the syndrome of symptoms we have. I think sometimes we are inclined to focus our minds too much on one part of the patient's anatomy and forget the balance of the body; in other words, pain from certain types of pneumonia in children, as Dr. Hedges has referred to, may become located in the region of the gall-bladder or the appendix, but we are apt sometimes, particularly in the beginning of our experience, to forget to look anywhere else for trouble but in the region of the gall-bladder and the appendix, or where the greatest pain may be found.

The doctor's paper recalls a case I had a few years ago. A gentleman came to Atlantic City from the state of Kansas; my associate saw him in the middle of the night with what he presumed was an ordinary attack of enterocolitis. The next morning pain was located in the left kidney and continued to stay there. He had no symptoms on the right side from his diaphragm down to his pelvis. He had no pain or rigidity. He had a history of kidney colic. He had pus and blood in the urine on the left side, and had a leucocytosis. We felt that he must have a kidney infection, a pyelitis, or something of that kind. We urged him to go to the hospital which he refused to do until the last moment. After he got there, we found on opening him up a perforated appendix with the tip to the left side of the midline, buried in a puddle of pus and walled off by the omentum. We found the kidney perfectly normal. I cite this case to show how elusive pain is, and how far astray we may go if we depend on it alone. A man may have appendicitis under certain conditions and have pain anywhere in his whole abdomen.

Dr. William Seaman Bainbridge, of New York City, called attention to Lane's kinks in relation to cases of appendicitis in which removal of the appendix fails to effect a cure. Four years ago he went to London with the determination of investigating some of the seemingly absurd and extreme statements made at Guy's Hospital with reference to Lane's kinks. Each year during four successive visits, he has had the opportunity of examining many of Lane's cases, of studying his serial skiagraphs showing the bismuth in its transit through the intestine, and of following thirty of these cases year after year. Lane's work, in his opinion, explains some of the cases in which the intestinal symptoms continue after removal of an appendix which was not very seriously involved. The appendix may be removed, but if the gut is kinked, as described by Lane, intestinal stasis and its concomitant symptoms are the result. More and more attention is being devoted to the possibility of the existence of these kinks, and to the study of their etiology and treatment. Whether Lane's theory of their formation be correct or not, undoubtedly he has demonstrated by his cases and pictures the existence of such conditions.

According to Lane's theory, the weight of the abdominal viscera tends to cause, in the upright position, a ptosis of the heavier parts of the alimentary canal, notably the stomach, when it is filled with food, and the large intestine, when it is loaded with feces. With the dropping of the viscera there is dragging of the mesentery, resulting in the formation of thickened bands, sometimes referred to as "evolutionary adhesions," the function of which seems to be to support the intestines and to prevent them from dropping downward. The unequal strength of these bands in different parts leads to unequal support throughout, and as a consequence the bowel is held up firmly in some points and allowed to sag in others, the result being angulation or kinking at the point of support.

The perfectly natural outcome of this condition of affairs is obstruction of the lumen of the intestine at the point of the kink, with damming back of the contents, and general slowing of the drainage of the canal. Reabsorption and autointoxication are the inevitable results, leading, in Lane's opinion, to a general lowering of the resistance of the body and the concomitant increase of susceptibility to various disease.

The points of predilection for the formation of these kinks are: (1) in the third part of the duodenum, at the commencement of the jejunum; (2) at different points along the terminal coil of the ileum, "Lane's Ileal Kink"; (3) in the ileocecal region, including the appendix; (4) in the region of the hepatic flexure and the first part of the transverse colon; (5) at the splenic flexure; (6) at the sigmoid loop; (7) in the rectum.

Adventitious adhesions, or pseudo-kinks, are not to be confused with the so-called Lane's kinks.

The treatment of these conditions varies with the location of the kink and the degree of obstruction.

Dr. Hugo O. Pantzer, Indianapolis.—With regard to cold fingers, in my estimate, these interfere with making abdominal diagnosis to an extent almost to rule out the man having such. Delicate perception is impossible with cold fingers; and then, the cold touch on the abdomen induces muscular rigidity of the abdominal wall. Gross pathology only can be elicited with cold fingers.

Regarding the cases referred to by Dr. Hedges, when appendicitis was clinically manifest, and yet at operation appendicitis was not found, I would contend that many such cases are yet due to appendicitis. They will reveal pericecal and periilial membranes and bands, which are logically traceable to lymphangitis produced by subacute, chronic appendicitis. This is a form of appendicitis that ends frequently in partial or whole obliteration of the appendix, commonly without developing an acute crisis, such as calls for immediate operation. But in these cases, we may find the entire mesenteriolum contracted so as to draw and plaster the appendix to the wall of the cecum, contracting the adjacent cecum, and drawing the ileum out of place, angulating or twisting it, and forming the characteristic Jackson's membrane over the cecum. In such cases the posterior cecal wall is found contracted, drawn high up, and adherent to the parietes, while the anterior cecal wall is found lengthened out, extending often down to Poupart's ligament. These cases form a class distinct from that due to enteroptosis. Often the cecum is bound down by a broad band that plasters it against the lateral pelvic wall. It forms a sausage-like organ, hugging the pelvic bone, and passing along Poupart's ligament down to the symphysis. With such displacement and distortion of the cecum, obviously, the feeding arm of the ileum becomes drawn, twisted and dislocated. Gentle touch will reveal these conditions before operation; the ileal loop being indicated by the tenderness and

bloating, extending to, and at times beyond, the umbilicus. The full release of these adhesions and membranes, will make for return to normal position and mobility of these organs. A warm touch soon after operation reveals that the cecum has receded to its normal position. This return to an approximately normal position may be adduced as evidence of the inflammatory nature of the displacement. Such recession would not occur, if congenital ptosis were the sole factor of the production, for which contention is made by some writers. Simple transverse cutting of these inflammatory membranes should suffice. There is no need to separate them from the cecum or ileum. Being scar-like tissue they will retract of themselves, and this occurs with less traumatism and liability to adhesions, than where the surgeon attempts it. I have never found resection of the intestine indicated by such condition as has been found and done by Lane, Jackson, and others.

Dr. Miles F. Porter, Ft. Wayne.—I want to emphasize the differentiation between pain and tenderness. Tenderness to the surgeon usually means something definite. It means in the abdomen usually a pathologic condition at the basis of which there is an infection. Pain may mean half a dozen things.

I would like to make another point: If we would stop looking at so-called pneumonia as a local infection of the lungs, and look upon it as a general septic process which may manifest itself in any tissue of the body, we will not be so often caught up in our diagnosis between abdominal and so-called lung lesions. The fact of the business is that in a great many of these cases of so-called pneumonias simulating appendicitis, we do have a pathologic lesion in the abdomen and it is due to the pneumococcus. It simply means that you have something more than a pneumonia.

I would like to call attention to another fact. Some ten years ago I read a paper before the American Medical Association on the association of colitis, constipation and appendicitis, and I called attention to the fact that a great many cases of appendicitis are consequent upon or are the result of primary infection of the colon. Let me call attention to one other point, and that is, that not every lesion in the lower part of the abdomen or in the right lower quadrant of the abdomen is due to a lesion of the appendix, nor are the suppurating lesions necessarily the results of perforation. Within the last ten days it has been my fortune to make autopsies in two cases of localized suppurating peritonitis, one in the right and the other in the left lower quadrant of the abdomen, in neither of which was there involvement of the appendix, and in neither one of which was there a perforative lesion of the bowel, but in both of which there was a marked colitis.

Dr. Francis Reder, St. Louis.—One of the most interesting allusions Dr. Hedges made in his paper is what Dr. Porter has dwelt upon, namely, abdominal conditions that are secondary

only in a sympathetic way. If such a patient falls into the hands of a surgeon, who ignores that branch of medicine belonging to the internist, he is going to lose his appendix. The abdominal symptoms, strange to say, manifest themselves somewhat earlier than the clinical picture which gives us the classic symptoms that will permit of the diagnosis of either a pulmonary lesion or a pleuritic lesion. Dr. Darnall is correct in stating that in cases of appendicitis the patient may have pain almost anywhere. It is the duty of a surgeon to make a diagnosis, whether he be right or wrong, before he enters the abdominal cavity. He must have a diagnosis as a basis upon which to work. In the chronic form of appendicitis we sometimes have a symptom-complex which appears to involve every organ in the abdominal cavity. We meet with patients who are not sick enough to be in bed, and not well enough to be at work. They are gradually drifting into a state of invalidism. How is this form of chronic appendicitis to be diagnosed? There is one point well worth remembering. This point is not extensively known. It can be brought out only by rectal examination. By introducing the finger into the rectum and through the valve of O'Beirne, gentle traction, while the finger is swept about the region of the right iliac fossa, will cause pain of characteristic value. No reflexes will be elicited when the finger is swept toward the left iliac fossa, unless a pathologic lesion is present.

HOW DOES LAPAROTOMY CURE TUBERCULOUS PERITONITIS?

BY

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THE review of medical literature on tuberculous peritonitis shows that it was first known in 1825. The malignant appearance of the full-blown disease found at autopsy gave it the significance of an invariably fatal condition. Particular clinical interest for this disease did not develop until much later: when cures were observed following laparotomy undertaken on mistaken diagnosis. Spencer Wells reports such an occurrence of the year 1862. A woman, aged twenty-two, was operated for presumed ovarian tumor. Tuberculous peritonitis was found. The fluid within the abdomen was discharged and the abdomen closed. Contrary to expectation the patient got well, and was known to live twenty-five years afterward. Koenig's report, in 1884, of four cases treated by laparotomy with three recoveries, and his advocacy of this measure in all such cases, aroused general professional interest.

A great mass of clinical and scientific observations has since then been accumulated. Much information pertaining to the clinical varieties of the disease and their varied course; its spontaneous cure in a large percentage of cases; its curability by surgery, and by internal and hygienic measures; its complication by the same disease in other organs, and by other diseases, etc., has been developed. But there is still great diversity of opinion on many points. Especially as yet, there has been no satisfactory explanation offered why laparotomy should exert curative influences over this form of tuberculosis. While there are those who still contend that the internal (*i.e.*, nonsurgical) treatment of tuberculous peritonitis yields the best results, and, some few advocate this plan of treatment, it is to-day generally conceded that certain kinds of tuberculous peritonitis shall invariably be treated by laparotomy; that its employment in other kinds of cases at least must be favorably considered; and that in certain other forms of the disease laparotomy shall not be attempted, on account of the almost invariable fatal result.

The first twenty years following Koenig's publication, brought out many statistical reports, variously construed by the surgical or internal bias, or the limited personal experience of their respective authors; and without as yet settling many moot points. Quite in contrast with this expression, is the rather non-committal character and paucity of the literature on this subject appearing during the last decade. For the purpose of this paper, it is mete to take up singly the moot point of how a laparotomy effects a cure in tuberculous peritonitis.

The writer was in Germany when Koenig's publication appeared and became the subject of interested discussion everywhere. He attended Koch's course at the Royal Hygienic Institute at Berlin, and was present at the International Medical Congress, in 1890, when Koch made his epochal announcement of his discovery of the tubercle bacillus, and also of a remedy, tuberculin, which, given to the guinea-pig produced immunity against tuberculosis, and cure in the same animal where the disease preceded the administration of the remedy. It was the privilege of the writer, in 1893, to report the first two cases of this kind in Indiana, designedly treated with laparotomy. Naturally this subject has always held his great interest.

The explanations variously offered of the relief or cure obtained by laparotomy, were singularly unsatisfactory, as evidenced in the antithetical expression often heard, that the method of cure is without its parallel in medical history. The admission of air to the abdomen, the introduction of various medicaments, the handling of the intestines, the exposure of the opened abdomen to sunlight, and other procedures in addition to the laparotomy, each and all, are untenable in view of their absolute inefficacy in the presence of the same disease in other parts or organs of the body.

The writer early was impressed with the clinical observation, that most of these cases develop a rise in temperature which in several distinctive phases is unlike the febrile temperature of an infection after laparotomy. The immediate effect upon the general condition of the patient undergoing this pyrexia, and the ultimate results in these cases vary greatly from the effects of the ordinary postoperative infection. The temperature observed in these cases arises variably from eight to thirty hours after operation, oftenest about the early time. In other words, this fever arises earlier than the fever of infection following an operation. It is of transient duration and marks a stimulating,

rather than a depressing, effect. The shorter duration of this fever and the relative absence of the bad effects attendant upon an infectious disease, are remarkable. The symptoms of a local reaction about the parts affected with tuberculosis and handled during the operation is rather more transient and less severe, than where is is owing to a postoperative infectious activity. The ultimate condition and result are striking occurrences. These patients make remarkable speedy and, withal, often permanent recoveries. This is in impressive contrast with the low vitality and lengthy morbidity of these patients present before the operation. The course of these patients, when compared with the slow, imperfect and often relapsing course of similar patients treated internally and hygienically, is too notable to go without consideration or comment.

It seems reasonable to associate these effects of a laparotomy for peritoneal tuberculosis, *with the active absorption, from the abdomen, of fluids engendered by the disease itself.* The thought lay near to regard such fluids found in the abdomen of these cases, as consisting of *an autogenous tuberculin, associated or not, with antibodies.*

The more definite solution of the multiple and diversified problems associated with this question, must be left with laboratory and experimental research. It is entirely beyond the domain and capacity of the clinician. It may be hoped that, some day, we shall be able to determine in advance the quality of the fluid present in a single case, and so to modify the quantity or the quality of this therapeutic agent, as to enable us eventually to prevent the deaths and imperfect results otherwise attending upon the treatment of such cases to-day. We may hope even some day to avoid the incurrence of laparotomy for the cure of this disease. It seems possible that the fluids thus obtained may be utilized ultimately in the treatment of all sorts of tuberculosis in any part or organ of the body. Further mooting of these hopes shall here be discontinued.

The writer has long since entertained the convictions here expressed. They have been, in the course of the years, expressed by him repeatedly on occasions of medical meetings, without finding echo.

A case of unusual interest came under treatment in 1907. Its history seems particularly instructive, and illustrative of the reaction following laparotomy in these cases. Sufficient time has elapsed to warrant its publication.

Miss M. M., Irish-American, aged twenty-three, had been weakly for several years. During the last years a cough with characteristic expectoration, and the microscopical finding of tubercle bacilli and the chest conditions present, had led to the diagnosis of pulmonary and pleural tuberculosis. Dysmenorrhea, with pelvic pain and abdominal tenderness had been present a long time, and latterly there appeared recurring attacks of colic and burning, in definite localities of the abdomen. July 16, 1907, patient was seized with acute colic and persistent vomiting. Purgatives given by mouth and by rectum during the succeeding five days failed to discharge the intestinal tract. I was called, by the attending physician, Dr. James H. Brill, late in the evening of July 21, 1907. Patient presented the general characteristic evidence of chronic phthisis. Both apices and the lower left lung and pleura were found involved. Acute attacks of colic came up at short intervals, during which the emaciated and somewhat distended abdominal walls showed in distinct outline loops of small intestine in active peristalsis. The suffering from this source was accompanied with coughing and retching. The miserable general state and the several grave local conditions of the patient marked an extreme, not to say hopeless, condition. Pulse was weak, 140–160. Temperature 102° F. An operation seemed worse than useless. Yet, the immediate suffering of the patient called for relief. Patient was at once transported to the St. Vincent's Hospital. Chamomile tea, sodium chloride, sodium salicylate, and spirits of camphor were given by rectum every four hours during the night. Operation at 8 A. M. the following morning. Dr. Brill present. One H. M. C. Abbott tablet was given one hour before the operation; small quantities of ether, during the same. Good narcosis. Medium incision below the umbilicus, revealed general, parietal and visceral tuberculosis. Fair amount of turbid exudate. Small intestines, at three points, and also involving the sigmoid loop extensively, were matted together by dense fibrous adhesions. The adhesions required cutting by knife and scissors for their relief. The adjoining mesentery at different parts was intimately involved, making separation difficult, tedious and at times seemingly impossible. The tubes, broad ligaments, appendix and cecum showed tuberculous changes in marked degree.

Patient's general condition immediately after the operation, relatively good. No shock. There was no vomiting during the operation. Five hours later patient was found smiling, without

pain or distress, quite in contrast with the previous condition. No vomiting or nausea after operation. Rectal feeding and medication after operation as during preceding night. Rectum soon became irritable, owing to frequent diarrheal discharges, and enemata had to be discontinued. Water was given by mouth after first six hours, other fluids, after first twelve hours. Digestion good. Temperature during this day varied between 99.5° and 102° F. Pulse at first 140–150, next day under strychnine, about 120, less feeble. General condition very fair. During second day, involuntary rectal discharges. Later in the afternoon flighty mind and great physical restlessness, without complement of pain. Temperature 103° F., pulse 120–130, rather full. Urine in fair quantity; albumin positive. A few hours later patient became maniacal, and shortly after, at 7.30 P. M., general convulsions of about ten minutes duration occurred. When I reached patient at 8 P. M., the convulsions had ceased and coma was present. Temperature by axilla 102° F.; pulse bounding; skin moist; pupils contracted, equal, some response to light. There was no evidence of a localized cerebral involvement in the convulsive movements, nor during the coma. Diagnosis: toxemia from abdominal absorption. I had never before observed convulsions in such cases. The toxic manifestation in this instance by far exceeded anything I had met before in similar cases But, relying on my previous observation in such cases, prognosis was at once declared; not without a fair hope. I should here report that the Catholic priests and sisters, and the relatives of the patient present at this time, received my statement of hope with undisguised incredulity. In the morning of July 25, the patient was quiet, rational, though weak. Temperature 100.2° F., pulse 100, less bounding. Skin moist; free diuresis. The subsequent recovery of this patient at the hospital during the next three weeks, was uneventful. Coughing and expectoration were greatly lessened at once. Patient was able to feed remarkably successfully, when her previous condition was considered, and after her discharge from hospital went back into the hands of her former medical attendant. Creosote and cod-liver oil were given internally, and hygienic measures were carried out with fair vigor, though patient's peevishness and self will, acquired by former invalidism, left much to be wished for. Great definite general and pulmonary improvement followed early. I did not see patient again until Feb. 4, 1908. She looked infinitely improved. Nutrition was fair-to-good. No more pulmonary

symptoms, though occasional pain and tenderness to pressure over lower left chest were complained of. Examination of chest revealed no evidence of an active process. Menses, before operation painful, since had been painless, until last flow, which was very painful. Examination revealed fecal impaction of rectum and entire colon. Moving the uterus, gave rise to pain. Castor oil daily. Examination one week later, revealed thickened and tender tubes; boggy and tender sigmoid and cecum. Temperature at 4 P. M. 99.3° F. Lungs negative, except as to evidence of obsolete processes. Patient had relaxed in her efforts as had her family in their attention to the patient. The attending physician had not been consulted for a long time. Hygienic treatment and creosote had been discontinued for some months.

Diagnosis.—Tuberculosis of tubes, cecum and appendix. Operation was advocated, but was not favorably entertained by the family. Referred back to Dr. Brill. Creosote and hygienic measures were again taken up.

During April, 1909, more than one year later, patient returned. Fair general condition. No pulmonary symptoms. Menses painful, too free. Constipation, requiring medication. Much dragging and heaviness in pelvis. Uterus enlarged, soft, tender; tubes increasedly thickened. Cecal region doughy, tender and painful on pressure.

Diagnosis.—Cecal and tubal tuberculosis. Operation insistently advocated.

Operation at St. Vincent's Hospital, May 27, 1909, twenty-six months after first operation. Dr. Brill present. Two H. M. C. Abbott tablets, two hours and a half hour respectively before operation: good effect. Chloroform in small quantity at intervals. Good narcosis. Incision through old scar in median line. Wound by former operation perfectly healed. A loop of small intestine, 20 inches long, was found abnormally adherent to its own mesentery, was twisted, in part, so as to encroach upon its lumen perceptibly. These adhesions were firm, requiring knife and scissors for their release. A few white nodules, some the size of a split pea, consisted of calcareous matter were present as remnants from the former tuberculous process. The left tube, and the appendix vermiformis adhered to the adjacent intestine. Tubercles were strewn over all these organs, including the upper part of the uterus and cecum. The uterus was enlarged to the size of a four weeks' pregnancy; of relatively firm consistency. The tubes were indurated, irregularly nodular. Both tubes

were resected in wedge form from uterus. Free bleeding occurred from all surfaces. Evidently nature was well on the defensive. The left ovary contained a cyst the size of a pigeon's egg; ovary removed. Right ovary was in good form. The appendix was freed from adhesions and ablated. Uterus was ventrofixed. Abdomen closed. Curetage of uterus yielded few scrapings. Patient in good condition. Mild but definite febrile reaction within first twenty-four hours, attended by little malaise. Uneventful recovery, but for acute pelvic congestion and pain at next menstrual period, while at hospital. Small intrapelvic hemorrhage was diagnosed. June 20, 1909, patient left hospital in very good condition and cheer. The immediate subsequent history very satisfactory.

June 24, 1912 (five years after first, and three years after second operation), chest symptoms have not revived since first operation. Patient is no longer vulnerable to colds, as was markedly the case before first operation. Menses every one and one-half to two weeks. Flows less free; ordinary menstrual molimina accompany each flow, together with some sacral and occipital pain. Stomach weak at times. Bowels regular with bran-bread, without such, not. Patient has grown in height about one and one-half inches. Weighs more than she ever did before. Good color, good spirits. Creosote, Fowler's solution and compound tincture of cinchona were given. September 3, 1912, sister reports patient doing exceptionally well. Last complaints have practically disappeared.

Epicritically considered, this case presents many interesting points. A few may be noted here. The excessive toxemia with convulsions following the first operation, in the light of the subsequent course, may be regarded as having passed without leaving any blemish. The pulmonary and pleural disease was cured and became obsolete with remarkable rapidity and definiteness. All the vegetative functions, previously lagging, revived at once, like the fields, by a decisive rain after prolonged drought. White and Van Norman (*Archives of Internal Medicine*, vol. ix, No. 1, 1912) in an article entitled "The Determination of Individual Dosage in Tuberculin Therapy," say: "The principle in which we believe in tuberculin therapy is, that the object to be obtained is the *reaction of the body cells which results from a sufficient dose of tuberculin*, and not the tolerance which comes from gradually increasing dosage." Certainly "the reaction of the body cells" even after this excessive dosage was dis-

tinctly marked and helpful. It may be that larger doses of tuberculin, than ordinarily given, especially of the autogenous product, are clearly indicated by the results obtained in this case. Evidently the saving feature in this case, at the time of the excessive toxemia, was the active condition of the eliminating organs. The enemata given before the operation favored this function. Thorough examination into, and the proper preparation of, these organs, before an anticipated toxemia seems an imperative duty. The writer cannot but assume that disregard of this preparation of the eliminating organs may account for the occasional disaster attending the use of any of the various toxins nowadays employed in therapy.

The case may be adduced as indirect evidence, that whenever possible, the focal organs should be removed. The tubes and appendix were such focal organs in this case. The disease persisted here, even after extensive permanent cure of the disease of the small intestines, lungs and pleura. Of course this procedure was contraindicated in this case, because of the grave general condition of the patient at the time of the first operation. Any work beyond the actual immediate need was necessarily postponed. An early secondary operation, in similar cases, is urgently advisable. It is evident, from this case, that pulmonary and pleural tuberculosis, complicating tuberculous peritonitis, does not of itself contraindicate laparotomy. It is also clearly shown by the history of this case, that individuals predisposed to tuberculosis and weakened by lung disease, require active supervision and treatment for a long period after laparotomy and an apparent cure.

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URETERAL INJURIES.

BY

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In studying the literature of this important subject, I have been much impressed with the paucity of our knowledge and the futility of our resources in dealing with this condition. Many surgeons are felicitating themselves that a ureteral injury has not occurred in their practice, but I am sure they do not realize that a ureter can be tied off or clamped, and the patient need suffer no symptoms which would give rise to even a suspicion of the accident. No pain results, no appreciable hydronephrosis occurs; in fact, the kidney is simply killed, its function is at once in a great measure suspended, and gradually it atrophies until there is nothing left but a fibrous cord. These injuries may occur during the progress of an abdominal operation; perhaps in the enucleation of large and deeply imbedded fibroids, or in the removal of malignant growths; in fact, in a hysterectomy, vaginal or abdominal, for any condition. The ureter may be accidentally cut, torn, cauterized or injured anywhere in its course, high up between the kidney and bladder, or low down at its entrance into the bladder; or it may be purposely tied off, so as to exclude the function of the kidney, if for any reason, this course was deemed advisable. As, for example, where the ureter had been injured and it was found necessary to complete the operation as quickly as possible on account of the serious condition of the patient, or because so large a piece of the canal had been removed that it was impossible to approximate the ends.

Some interesting experiments have been made on animals by Kawasoye (*Zeit. f. Gyn. Urologie*, 1912, 111, 113) to determine which was the best method to occlude the ureter: (1) by simple ligation; (2) the formation of a two-limbed U-shaped kink, the two limbs being tightly tied together; (3) the formation of a three-limbed Z-shaped kink, the three parallel limbs being sewed together with catgut, and a simple ligature in addition being thrown around the ureter distal to the kink; (4) the formation of a true knot in the ureter distal to which a simple ligature

was placed. Only the last of these methods has proved trustworthy—"Clark."

In all ligature operations in which stasis of urine and dilatation of the ureter above the point of ligature takes place an abscess or fistula is apt to result from the cutting through of the wall of the ureter by the ligature. So, in order to get perfect occlusion of the tube by fibrous organization which will completely obliterate its lumen, the ureter must be well loosened out of its bed and a knot made in it and then the open end tied by some sort of ligature material, because in this way the urine as it is secreted trickles so slowly into the tube that little or no pressure is made at the point of ligature from distention.

When the ureter has been injured high up during an abdominal operation the divided ends can often be found and may be brought together by one of the many methods in vogue for ureteral anastomosis, or perhaps the distal end can be lifted up and dissected out freely, so as to implant it into the bladder, at a point sufficiently high not to interfere with the gravitation and free flow of the urine, and, if successfully performed, the future function of the kidney will not be in any way jeopardized because the injury was repaired before any secondary changes could have taken place in the organ. If, however, the ligature slips, or the union is imperfect, or a slough results from pressure necrosis from a clamp, and a urinary fistula follows—whether abdominal or vaginal—an interesting pathology sets in; a more or less distention of the ureter and calices has taken place, and an ascending infection is added through this open end, which in time produces such destructive changes to the renal parenchyma that the future of the kidney is so imperilled that its removal is often necessary, not alone because of the annoyance due to this urinary dribbling, but because of the pain, distress and ill health consequent upon the irritating presence of the infected and useless organ.

Some interesting experiments upon dogs have been made by Beers of New York, and his conclusions may be of some value in this class of injuries, as reported in the *Medical Sciences* for June, 1912, and the April number of *American Journal of Urology*. The Mayos and many other surgeons knew clinically that when a ureter had been injured and a urinary fistula had resulted and had existed for four weeks, ureteral implantation was not advisable, and when the implantation had been successfully made, often it became necessary to take out the kidney. Beers oper-

ated upon sixty dogs, and his observations and experiments extended over a period of four years.

"He found that after ligation of the ureter hydronephrosis developed in aseptic kidneys, with cessation of secretion, at about the third week. The kidney then began to shrink, and at the end of three months there remained only a fibrous mass not more than one-fourth the size of a normal kidney. If before the end of three weeks the ligature was removed, and the unobstructed kidney taken out by nephrectomy, the released kidney was found capable of functioning satisfactorily. If, after ligating a ureter, septic organisms were introduced, the kidney and its pelvis became distended, kidney substance disappeared, and at the end of three months there was found only a mere cystic shell of the kidney and its capsule. In the septic cases removal of the ligature and nephrectomy of the unobstructed kidney always led to a fatal result. The importance of these investigations cannot be overestimated since they taught us, first, that the occlusion of an aseptic kidney might result in no harm except atrophy of the organ; second, that if within three weeks the ureter was reimplanted in the bladder, the kidney would resume its function; and, third, that a ligated septic kidney degenerated beyond redemption. If accidentally ligated, cut, or otherwise injured, the ureter should at once be repaired, reimplanted, or released, or later the complete removal of the kidney would be an imperative necessity."—*Gallant.*

The dangers of ureteral injuries are much greater when operating through the vagina, and particularly if the vagina be small and the uterus placed high in the pelvic cavity, and I believe these dangers are increased by the use of the clamp forceps, because, in this class of cases, the forceps are usually removed after thirty-six hours, when the possibilities of hemorrhage from the opening of the divided vessels has ceased. If the broad ligaments have been tied off by catgut, and especially chromic gut or silk, then these late sloughs, as are occasioned by the use of forceps, are not so often seen because the ligature is a permanent method of hemostasis, and if the ureter is encircled in the knot it remains so long occluded that its lower end may become permanently sealed, but not always, as was shown by Kawasoye's experiments previously referred to, and the kidney will be forever put out of commission and with no disagreeable symptoms, providing the other organ is healthy, because it so quickly hypertrophies, and vicariously does the work of two.

Perhaps the matter of secretion after occlusion of the ureter is simply one of hydrodynamics, and goes on until the limit of distention of the ureter and pelvis is reached. Then the extra-renal pressure becomes greater than the secretory pressure, and secretion ceases, and when the function of the renal parenchyma is at an end atrophy results.

A very important question presents itself to the practical surgeon: assuming that it is not desirable or possible to satisfactorily replant a torn ureter into the bladder, what shall we do and when shall it be done? Many of these cases of urinary fistula and its consequent urinary dribbling, if left, close of themselves. The kidney shrivels and stops secreting, and the leak ceases, and the patient is satisfied and perhaps enjoys excellent health. How long a sensitive woman can or should submit to this very annoying and distressing condition is a matter for grave and serious reflection. Murphy maintains that "if you take out a kidney that has only a little of its tissue destroyed, you hazard the life of the patient 30 per cent.; that is, thirty in one hundred die. If you take out a kidney of which little is left, only a shell—you hazard the patient about 2 per cent." It seems to me, therefore, that it is prudent to have these unfortunate women bear their burdens for a few months, until the danger time of operative intervention has been reduced to a minimum, because at a late date the good kidney has assumed the work of the disabled organ and the dangers of urinary suppression from operation are practically eliminated, and then perhaps a case, when left this length of time, may close up and give no further annoyance or trouble.

Let me briefly report an interesting experience which came to me when I least expected it:

I operated upon a Mrs. Z., æt forty-eight, on October 10, 1911. She had two children, one twenty-six and the other seventeen years of age. Diagnosis: uterine prolapse, with cystocele and rectocele; the cervix came out beyond the introitus, although the body of the uterus remained well up in the pelvic cavity and retroverted. I did a vaginal hysterectomy, with anterior and posterior colporrhaphy and perineorrhaphy. I separated the structures well off to right and left and presumed the ureters were out of the path of injury and clamped very close to the uterus, as it was perfectly healthy. I used the clamp method, as I thought it would be the easiest and safest operation, and I did a vaginal hysterectomy because I did not wish to make an incision into the abdominal wall, as the woman had a very beautiful figure, and

also on account of the possibility of future adhesions. The technical difficulties were not great, and the operation was easily and quickly done. On the evening of the second day the temperature rose to 100°, but after that it remained normal, and the pulse was only once above 90, and then fell to 70 and remained there throughout the convalescence. There was practically no pain, and only twice she received an eighth of a gram of morphia hyperdermically. She voided in the first twenty-four hours over 1000 c.c. of urine, and thereafter over 1500 c.c. every day. She left the hospital on the fourteenth day, and was about her house, when on the seventeenth day, while in bed, she felt something give away, and then noticed that urine was coming freely through the vagina. Upon examination I found some loose sloughs in the vaginal vault, which I removed and directed her to use a douche for a few days, and to estimate the amount of urine passed in twenty-four hours, and what she voided at any one time. She never passed more than 2 1/2 to 3 ounces, and the total amount collected in twenty-four hours was a little over 1 pint. This state of affairs continued for about five weeks, when I called in Dr. Lothrop, who assisted me in cystoscoping the bladder and to whose experience I give much deference. First, we let run through a catheter into the bladder, some weak methyline blue solution, and noticed that it did not return by the vaginal opening. We then put a pint of the solution into the bladder, and withdrew it through the catheter, which showed us that the bladder was not injured and that the ureteral opening of the bladder was closed. After washing the bladder clean of the blue solution, we catherized the right ureter, but could not get into the left one. It was now evident that the left ureter had been injured and the slough had given away and there existed a left ureteral fistula. Two courses were open to me: either to remove the kidney, which I thought was a cowardly proceeding, or to reimplant the torn end into the bladder. I at once communicated with Dr. Will Mayo, whom I knew had had a large experience in ureteral surgery, and his very practical letter to me made me at once decide that perhaps it was the best surgery to remove the kidney when a ureteral fistula had existed for so long a time. The woman willingly accepted my advice, and went to the German Hospital and I removed the kidney which I found very adherent and considerably enlarged. It was delivered with a great deal of difficulty. The woman voided 38 ounces the first day after operation, and under salt infusion 60 ounces of urine

were passed in the second twenty-four hours, and a normal amount thereafter. She left the hospital on the tenth day, and I am pleased to say she is now a well woman. The plastic surgery which was done on the anterior and posterior vaginal walls and the perineum are very satisfactory, and there is no tendency whatsoever to a returning cystocele or rectocele. Her blood pressure is 127. I append herewith the report of Dr. Williams, pathologist to the University of Buffalo, and Dr. Will Mayo's very practical letter to me.

Dr. Mayo writes; "I think that taking everything into consideration, it is a question whether or not it would be wiser to remove the kidney. It undergoes such rapid changes after the ureter has been cut, and in a considerable number of cases, nephrectomy eventually becomes necessary, and at that time the kidney is usually found to have but little function. The patient, who has but one perfectly good kidney, is better off than a patient having one good kidney and one bad one. In the case of the patient having one kidney, the kidney quickly hypertrophies and is competent to do the work for both."

DR. WILLIAMS' REPORT ON THE SPECIMEN.

Case of Doctor H. E. Hayd.

Left kidney; weight, 5 ounces, pink in color. Two small areas of subcapsular hemorrhage said to be the result of operative clamps. On section average width of the cortex is 1/4 inch. Capsule strips with a little difficulty leaving a moderately finely granular surface; cortex pale, pyramids bright pink; pelvis distended, mucosa thickened and roughened; mouths of calices distended.

Microscopic.—Capsule moderately thickened with numerous areas of cellular infiltration between the tubules with a few fibrous glomeruli and sclerotic arteries. The convoluted tubules show granular débris, probably unimportant; the straight collecting tubules show desquamation of the epithelium and some hyaline casts, and some hemorrhage between the tubules. The pelvic mucosa is swollen, with a uniform infiltration with leukocytes, many eosinophiles and large numbers of lymphocytes, often in masses, beneath the epithelium; these latter may represent the lymphoid tissue of the mucosa.

The infiltration of the polynuclear leukocytes gives the most conclusive evidence of inflammation. The small veins below the epithelium are dilated and to a large extent filled with poly-

nuclear leukocytes. The polynuclear leukocytes also infiltrate the layers of the epithelium between the epithelial cells.

Several medium-sized arteries in and below the mucosa show marked hyaline degeneration. Long slim cells in mucosa, arranged in parallel strings may represent budding capillaries. The infiltration of leukocytes extends widely into the fibrous tissue around the pelvis.

None of the changes noted in the kidney itself seem definitely referable to the surgical condition. The pyelitis in the pelvis of the kidney probably is.

493 Delaware Avenue.

DISCUSSION ON THE PAPER OF DR. HAYD.

Dr. Albert Goldspohn, Chicago.—It is very true, as the Germans experienced first years ago, that injury of the ureter is of frequent occurrence, especially during or after vaginal hysterectomy. This was more especially the case when the old French method was employed, clamping the structures and taking the clamps off one or two days after, a thing that ought not to be necessary except very rarely. It is a brutal piece of work. I cannot call it surgery to do vaginal hysterectomy chiefly by that method. The peritoneal cavity must then be left open which should be closed as a rule, the same as when we invade the peritoneum from anywhere else, unless drainage is necessary.

I am surprised at what Dr. Hayd said, that Dr. William Mayo advises extirpation of the kidney so soon after that accident, because we know that the kidney gradually and slowly undergoes atrophy when the urine runs astray. That is correct, but the atrophy of the kidney under these condition is a slow process. If the ureter is ligated, tie a knot in it and ligate it beyond the knot. That is the best thing for us to do when we meet such an injury high up, too high to reimplant into the bladder. It is either that or implant it into the ureter of the opposite side. If the case is a desperate one, and in order to get through safely, it is best to tie it, then there will be atrophy of the kidney in a rather short time for the reason the doctor has mentioned. But when the urine is at liberty to escape, the atrophy is a slow process; and I can say from an experience of two cases, that it is not necessary to extirpate the kidney so soon. Some years ago I did reimplant the ureter after it had been injured in a vaginal hysterectomy, in one instance by myself, and in another by another surgeon, reimplanting the ureter into the bladder in cases that were both more than six months old and with the best effect. The injury had been noticed and these patients were cautioned against permitting any septic condition in the vagina, so that the ascending infection might not occur before they were ready to have this operation done. I can say from experience

and from the opinion of the Germans at least, that it is not right to extirpate the kidney so soon if at all. If the patient will not consent to this second operation and extirpation is contemplated, then wait about half a year before you extirpate, for the reason that at that time, the other kidney will have assumed the function of this kidney whose urine has been running astray and the latter will be no longer needed.

Dr. Thomas B. Noble, Indianapolis.—I am exceedingly grateful to Dr. Hayd for bringing this matter before the Association. As he says, it is years since such a subject was presented before this Association, and yet it is a matter of rather frequent occurrence and occurs in the practice of every man who does much of our type of work. It is a matter that will come up in medico-legal ways. A more uniform opinion should exist as to when a nephrectomy should be done following a wound of the ureter. I believe that the ureter can be avoided more frequently than it has been. I dare to make that statement. I do not make it in a spirit of criticism. It does occur as an accident I believe, and I believe that, at the same time, the accident can be avoided if we exercise care in the performance of the different types of operations. My observation has been that this injury occurs, as has been said, very frequently in vaginal hysterectomy and in the removal of peculiarly situated fibroids; and furthermore, it will occur in cases of retroverted, prolapsed adherent uteri with old infected tubes and ovaries that involve the pelvic wall posterior to the broad ligaments, in which infiltration has occurred into the broad ligament—through the peritoneum—out into the pelvic wall outside of the peritoneum, the periureteral areolar tissue, if you please. In these cases, where a panhysterectomy is usually and properly performed, unless great care be exercised in putting the finger on this pathology, we are very prone to make it include the lower end of the ureter which will be torn.

Dr. Louis Frank, Louisville.—This is a subject in which I have been much interested, and though so far as I know the accident has not happened to me, I am sure that we have all tied off the ureter without a knowledge of the fact. I am absolutely sure of this. Probably all have done it once or twice, some of us oftener. I am not going to discuss what the last speaker said, namely, the type of case where this accident is liable to happen, where it is impossible to avoid it by any procedure whatsoever.

The statement was made by Dr. Morris some six or seven years ago, as you will find in the Transactions, that the ligation of the ureter in the human being was followed by absolutely no evil consequences and that atrophy of the kidney always took place. As a result of some recent experimental work undertaken last year, and remembering Dr. Morris' statement regarding the results of ligation of one ureter, I wish to say that it is quite a different proposition from the ligation of both ureters. Our experiments in tying one ureter showed some interesting facts. In the first place, I am convinced that the ligation

of a single ureter with healthy kidneys is not a safe procedure for the exclusion of the kidney. We find in a certain percentage of cases in these experiments that the animals developed marked pathology in the excluded kidney. We have some of the dogs living for more than a year with one ureter ligated, one dog with a fistula that has lived more than a year. It has been demonstrated that in some cases infection takes place through the blood channels; that the dammed up kidney becomes a *locus minoris resistentiæ.* This was pointed out by Brewer in his address before the Section on Surgery of the American Medical Association. Some of the kidneys became converted into a large abscess sac. We have found it difficult to produce ascending infection as long as the urine is flowing out. In ureterovaginal fistulæ or in any ureteral fistulæ, where the parts can be kept clean, ascending infection will not take place. We have infected the ureters in dogs with fistulæ, kept the external orifice of the ureter clean and no evidence of pus in the kidney could be found. So much for the question of destruction and infection of the kidney after ligation and ureteral fistulæ. The kidney is never absolutely destroyed after ureteral ligation. I believe that the doctor misunderstood when he said the kidney undergoes complete atrophy. It becomes the seat of fibrous infiltration. Nature replaces the normal structures with fibrous tissue, and a certain amount of contraction takes place.

As to the duration of function after ligation of the ureter, it has been supposed to exist for two weeks. In some cases of ours it has existed for two weeks and in some of the experiments it would last longer than that.

As to the method of exclusion, we have found that by tying the ureter with an absorbable ligature you can produce absolute exclusion that will last as long as one year. What happens after infection has taken place? We have abscesses formed in the kidney and the kidney becomes destroyed.

As to implantation of the ureter after fistula formation, how long should we wait? Practically, it makes no difference at all how long we wait if we have enough ureter to implant. If implantation of the ureter cannot be carried out, the kidney should be removed. After the ligation, if obstruction has existed for several days, and the other kidney has proved its functional ability to do all the work, we can remove the kidney. There is a mortality of 30 per cent. following the removal of the ordinary normal kidney, according to Murphy, but in this I disagree. I do not believe that the removal of a normal kidney, in the presence of another normal kidney, is followed by 30 per cent. mortality. I know it is not so. We do know that the removal of a kidney which has ceased functionating is not as disastrous as the removal of a supposedly normal kidney, for the reason the other kidney is carrying on the function, and we can rule the necessity of increased work out of consideration. It is largely a question of the function of the remaining kidney.

With reference to the question of fistula, it is stated that they sometimes disappear spontaneously. Not all of these apparent cures are the result of reestablishment of continuity of the ureter. In our experimental work we attempted to produce the same thing as we do in our operative work. We tied up the ureters with catgut; we tied them up with nonabsorbable sutures, when we found the catgut would be absorbed. When we implanted it in the abdominal wall there was absorption of the catgut and the establishment of a fistula. In one dog in which the urine ceased to come out of the fistula we believed we had a restoration of function. We allowed him to go on for two or three months, then opened him up, and found complete occlusion with a tremendous suppurating kidney on that side. The point I want to make is that occasionally the ureter may become occluded secondarily by cicatricial contraction as the ureter retracts and then the kidney is put out of commission completely.

When shall we do a nephrectomy in these cases? Where restoration of continuity cannot be carried out or the ureter transplanted into the bladder, nephrectomy should be done. If the fistula is where it cannot be kept clean, nephrectomy should be done as soon as the patient will stand the operation, and in such a case as Dr. Hayd has reported it could have been done earlier without any more danger than from any secondary operation of the same magnitude.

Dr. George Van Amber Brown, Detroit.—I wish to mention a case reported in literature in which, while doing a hysterectomy, the ureters had been tied with catgut, the accident not being detected until the abdomen had been closed. A stab wound was made into each kidney establishing drainage for urine until the catgut was absorbed, after which time the ureters were again functionating, when the kidney wound closed and the patient recovered. I cite this case as a hint to us, useful in handling these cases.

Dr. Rufus B. Hall, Cincinnati.—The ureter will be injured occasionally by the most careful operator, and I rise to speak in reference to the medico-legal aspect of this subject which was referred to by one of the previous speakers. I wish to amplify the statement made by him. In the very cases in which you injure the ureter you least expect to do so as a rule, yet there are cases where you do fear that you will injure the ureter, where you know that you may injure the ureter, and that is the one which you say one ought to catheterize so that you can locate it, but that is the case in which it is impossible to catheterize the ureter.

I refer to the *postperitoneal tumors*. You have, for instance, a tumor filling the pelvis, extending well into the abdomen, that is postperitoneal. You may catheterize the ureter on the right side, but when you come to catheterize the ureter on the left side you cannot do it because the tumor blocks it up. Not infrequently you expect a fibroid, and find maybe a fibroid or maybe a postperitoneal sarcoma. You go ahead and remove the tumor, and

in so doing you remove a section of the ureter. If it should go out from this Association that we should avoid the ureter in these cases by knowing where it is by catheterization, the lawyer has a good job and you are up against a very tough proposition in your self-defense. A patient demands relief, the surgeon removes the tumor, and in so doing he removes a section of the ureter on one side. He may not have known it at the time of the operation, but he knows it soon afterward. It has occurred to the speaker on three or four occasions to have injured the ureter accidentally in operating. This is a question to which we have to give due weight and consideration, because our transactions are used by the lawyer in his prosecution of men for malpractice, and at any time a lawyer in court is apt to take up one of these volumes and say that Dr. so-and-so said so and so, and how are you going to meet it? You must exercise due caution. If we can put a catheter in the ureter, of course we can avoid the ureter. That is perfectly self-evident, but I contend there are cases in which no man can catheterize both ureters with a tumor blocking up the pelvis.

In reference to another case, in the early history of this work, about fifteen or sixteen years ago, I removed a postperitoneal tumor. I though it was a broad ligament fibroid. It was situated low down and behind the uterus. In removing it I cut out a section of the ureter. I did not know that I cut off a piece of the ureter until some urine later came through the drainage tube. I left the tube in longer than usual and all the urine from one kidney came through the wound and persisted in doing so. She refused to have any further operation done, and has now a ureteral fistula. It is fifteen years since the operation was done. There is no disease of the kidney that can be determined by bimanual palpation or other examination.

Dr. H. W. Longyear, Detroit.—There are cases in which the rule suggested of producing atrophy of the kidney or leaving it for several months before its removal, cannot be followed. Such a case fell to my lot in which I knew I injured the ureter. The case was one of abdominal hysterectomy, with supravaginal amputation, for a large multinodular fibroid, part of which was intraligamentous. The woman made an ideal recovery. Before the end of the second week she complained of some fullness on the right side, and on examination I found a fluctuating tumor near the crest of the ilium. On incision quite a quantity of urine escaped. I kept up drainage for several days, then resorted to ureteral catheterization and found there was no urine passing to the bladder from that side. While the catheter was in place I made the incision larger, going under the peritoneum, and found the lower end of the ureter by the catheter, but could not in any way find the portion of the ureter coming down from the kidney, although I had given methylene blue, hoping I could detect it by the color. There was a cicatricial mass obscuring it, and I was obliged to give it up. I either had to go above and

go into the pelvis of the kidney, and come down through the ureter and try to unite it, or remove the kidney, or leave a fistula. I extended the incision upward, took out the kidney, and a perfect recovery ensued. It would have been impossible to have tied off the ureter, because I could not find it without going in from above. It would have been impossible to leave the case with a fistula of that kind without infection, which usually results in ultimate destruction of the kidney in such cases.

Dr. J. Henry Carstens, Detroit.—I had a number of cases of fistula in former years when I used the clamp. I do not use the clamp now except in rare instances. I have found in some cases that perhaps we do not clamp the ureter, but with the clamp we sometimes have more or less sloughing as a result, an ulcerative process goes on and perforates into the ureter two weeks or more after the operation. Fifteen years ago I had a patient with a fistula. There was excessive granulation, and I applied a little nitric acid three or four times, when the fistula closed and has remained closed.

I had another case in a strong healthy woman, who had a very narrow vagina. I used clamps. She had a fistula. After three or four months I took out the kidney. She had no further trouble. I had one other case where I did the same thing. The statement has been made that when the ureter is pervious and the urine runs out, the kidney continues to functionate. In my experience the kidney never ceases to functionate. If you take out a kidney which is carrying on one-half of the function of elimination, the other kidney has to do the whole work on short notice, and does not that kidney come up to the mark? It always does. You have no trouble at all. I want to make the point that, having two healthy kidneys in a perfectly healthy person, if you remove one kidney, the other kidney will do the work, and need not necessarily *gradually* develop hypertrophy.

Dr. Henry D. Furniss, New York City.—In these cases of injury to the ureter it depends whether you detect the injury at the time or whether you discover it afterward. In injuries of the ureter, you should implant the ureter into the bladder, if possible. If you cannot do that, I would not hesitate to take a chance of implanting it into the large intestine, even though there is a possibility of pyelitis occurring. Pyelitis, even though it does occur, is not apt to be fatal; it may exist for a long time. and if it should occur, the kidney can be taken out afterward. If I could not implant the ureter into the bladder or colon, I would put it out under the skin in the lumbar region, allowing it to project over the skin and not suturing the ureter to the skin, because if you do, you are apt to get a fistula. Recently I put two ureters out on the back preparatory to the removal of the whole bladder. In these cases you do not realize that you have injured the ureter until a week or twelve days afterward, or unless uremia sets in. In the Wertheim operation there is

1 per cent. of urinary fistula following it, due to necrosis, and the cases in which this occurs show up about ten days afterward.

I have seen some five cases of injury of the ureter. One where the ureter had been previously catheterized was cut, repaired at the time of injury, and the patient has had no subsequent trouble. One woman in whom both ureters were ligated died of uremia. Another had both ureters ligated during a vaginal hysterectomy, and the urine after three days escaped through the vagina. In this case both ureters were subsequently implanted into the vagina; cystoscopy three months later showed both kidneys discharging urine that upon examination was normal.

I had another case in which abdominal hysterectomy was performed, where the woman developed ureteral leakage through the vagina. It was difficult in that case to make a diagnosis of ureterovaginal fistula. It was thought at one time she had incontinence of urine from cystitis, and possibly she had a fistula.

One of the great points in the early diagnosis of these cases is that where the vaginal leakage approximates in amount that of the urine voided by the bladder ureterovaginal fistula should be suspected. At times the only way to detect an injury is by putting a pledget of cotton in the vagina and giving the women methylene blue; then we are able to locate the fistula by the stain.

We can determine the function of the kidney in these ureteral injuries by the administration of indigo-carmine, and compare the elimination from the bladder with that from the vagina. But there is one point to be remembered; when indigo-carmine and methylene blue are given to a patient who passes alkaline urine, it is excreted as a colorless urine. If we use the phenolsulphophthalein test, it makes no difference whether the urine is acid or alkaline, we can determine just the percentage that is eliminated.

Dr. James F. Baldwin, Columbus.—I wish to report one more case to those given by Dr. Goldspohn, in which I implanted the ureter into the bladder after the lapse of considerably more than four weeks after the original operation, which had been a vaginal hysterectomy for cancer. It is possible that the kidney atrophied after this operation was done, but there was no evidence of that. The patient died of recurrence some two or three years later.

Nearly all of the cases of urinary fistula which have been reported to-day have followed vaginal hysterectomy. In 1896 I made a special visit to Paris for the purpose of seeing the masters there do vaginal hysterectomy. I saw Pean, Pozzi, Richelot, and others doing this work with the most beautiful technic. I became enthusiastic over vaginal hysterectomy, and performed it a good many times after my return; but gradually I got over my enthusiasm, did more and more of the work through the abdomen, and at the present time I probably do not perform a vaginal hysterectomy oftener than once in two years, while abdominal hysterectomies are a matter of daily occurrence. I can do an

abdominal hysterectomy almost as quickly as the vaginal; I do not injure the ureter; I can examine the patient for gall stones, chronic appendicitis and Lane kinks, and my patients recover as thoroughly and as rapidly as after the vaginal operation. I do the latter operation only in some extreme cases in which seems safer than the abdominal.

I am surprised to hear of ureteral fistulas following the Wertheim operation. I like that operation very much, and do not see how the ureter can be injured. Occasionally in removing broad ligament cysts, fibroids, bad pus tubes, etc., as mentioned by Dr. Noble, the ureter is brought up, but I am watching for it, push it out of the way, and have never had a fistula. In those cases if much of the ureter has been exposed, I open the vagina and pass in a wisp of gauze, so that if there is any slough the urine will have a direct exit.

Dr. X. O. Werder, Pittsburgh.—I asked Dr. Hayd the question whether he had put in gauze drainage, because I have had two cases of ureterovaginal fistulæ as a result of the use of gauze drain, a number of years ago before I knew better. One case was a large tuboovarian abscess in which, after its enucleation, I found a large part of the ureter attached to the abscess wall, which I had considerable difficulty in separating without injury. Before closing the abdomen I put in a gauze drain right along the course of the ureter into the vagina, and ten days afterward a ureterovaginal fistula developed which, I am sure, was caused by the contact with the gauze with subsequent erosion of the ureter. In that case there was a spontaneous cure about six or eight months afterward. The leakage stopped, probably due to atrophy of the kidney.

Another case was one in which I had done a hysterectomy for a large intraligamentous fibroid. The operation was done in the afternoon. The next morning I found that not a drop of urine had been passed. I at once reopened the abdomen and found one ureter cut and the other tied. I implanted the cut ureter into the bladder and loosened the ligature on the other and put in along the ureter a gauze drain, and about ten or twelve days afterward I had a double ureterovaginal fistula, resulting, I feel confident from the gauze drain. This case was cured by turning a diverticulum of the bladder into the vagina, the patient has perfect control of her urine to-day though this operation was done about twelve years ago. It is a serious mistake to bring a gauze drain in direct contact with the ureters. It is always best wherever possible to cover the ureters with peritoneum; if this is not possible and drainage is considered necessary, then the gauze should be kept at a safe distance from the ureters. If you use drainage alongside the ureter, you are almost certain to have a certain amount of necrosis with a resulting fistula.

I have not been so fortunate as most of you. I have had five or six cases of fistula, three of which were in cases of carcinoma of the cervix where a radical operation was done. In one case the

kidney was removed subsequently by another surgeon, in the second case I resorted to implantation of the ureter into the bladder with a cure, but the patient died a year or so afterward from recurrence. At the time I opened the abdomen and dissected out the ureter I found the iliac glands considerably enlarged and enucleated them; microscopical examination proved them malignant. That patient died from a recurrence a year or fourteen months later.

In another case I had a double ureterovaginal fistula follow about ten days after operation. In this case I had done a vaginal igniextirpation for carcinoma of the cervix. The woman was sixty years of age, very fat, and for that reason I choose the vaginal route in preference to the abdominal. I put in gauze drainage and feel pretty sure this was responsible for the fistula in this case also. At any rate, ten days afterward we had leakage from the vagina and a day or two later all the urine passed away in this manner, and none at all reached the bladder. The patient went home in fairly good condition with the exception of this constant leakage. Six weeks later her family physician informed me that the vaginal urinary discharge had completely ceased and that the bladder was functionating normally. A spontaneous closure of these fistulæ had evidently taken place.

Dr. Albert Vander Veer, Albany.—I want to speak of a case that occurred in my practice in 1869, where a patient was tapped and tapped, as we used to get these patients, and it was my second case of ovariotomy. I recall very vividly the tremendous hard work I had in getting the tumor out. We were then following up Dr. Peaslee's favorable commendation of draining through the vagina. I introduced a T-drainage tube through the vagina, and was never quite satisfied as to what happened, whether I injured the ureter at the time of the removal of the tumor, or whether the introduction of the instrument, the scissors, used for making the incision may have done some injury to the ureter. At any rate, a few days afterward the patient had a profuse discharge of urine. She lived some little time, but I doubt whether we could have cured her even at the present time, owing to the extensive adhesions and the great size of the tumor. Naturally I thought over that case and what I was going to do, as she was discharging urine from the vagina, and about that time Simon published his first case of removal of the kidney for the closure of a ureteral sinus, and which brought me considerable comfort in this way. I said later we would remove this woman's kidney as I believed it was the proper thing to do. That case has always made a profound impression upon me.

As to vaginal hysterectomy, I agree with what has been said by the two previous speakers, that we have not been favorably impressed with that operation. It is seldom that I do this operation now. I have gone through the experience Dr. Baldwin referred to, and I must say that I do not like to do vaginal hys-

terectomy because I can do better work above. In one case I had an injury to the ureter, and for some twelve days afterward the patient passed a great amount of urine through the vagina. I could see a fistulous opening on the right side in the ureter. I did not attempt to do any operation nor an anastomosis, but I brought over connective tissue, in connection with the ureter freshened it, and put in a suture in that way. I was much pleased a few days afterward to know there was much less discharge and by simply keeping in the vagina packing for a little while the woman made a good recovery and lived for some eight years thereafter, not having any further return.

A very peculiar case came to the hospital with pelvic trouble soon after that, and I said to my assistant, "I am about through with vaginal hysterectomy." But he said it was the only thing to do. I said to him, "if you want to take this case and remove this uterus which, I believe is bound down with adhesions in every direction, and not do any harm to the ureter, you can operate on this woman." Well, he was full of vim. He took hold of the case and operated, and whatever happened in doing the operation, he said ten days afterward she was discharging a large amount of urine through her vagina. I examined the case with him, and it was apparent that injury had been done to the ureter. We watched the case for some time, for nearly a year, the woman suffered so much distress that she came into the hospital, and I did a nephrectomy from which she made a good recovery. But it was a kidney full of abscesses, and one that had become infected. Therefore I cannot quite agree with Dr. Carstens that these patients are going to escape infection. The experiments made upon dogs only recently, where the ureter was implanted into the rectum, show that the kidneys became infected in the majority of cases. In many of these cases of suppurating kidney I like to do the operation of nephrotomy, in the first place, and then, if necessary, remove the kidney afterward. If the other kidney is free from disease and is doing its work well, the mortality following nephrectomy of the other organ has been exceedingly low.

I have done a fair amount of abdominal surgery in my time, but I have never yet injured the ureter in operating above to my knowledge. I believe there is a mistake in the statistics, because I do not think we have so many of these cases of injuries to the ureters.

Dr. Hayd (closing the discussion).—I am extremely obliged to the Fellows for their splendid discussion of my paper. Their remarks have illuminated the subject considerably. To the younger men I wish to say, they must not think we do not invite criticism, because we get it here in this Association with ungloved hands, and I am surprised I did not get it harder than I did. It is a mighty serious question to operate on a rather prominent woman and find that you have cut or injured the ureter.

In regard to the remarks made by Dr. Frank, I will say that

I read the experiments of Beers very carefully. I read everyone of the cases. I epitomized the article and I think I understood it, but whether Dr. Frank got the same results in his experiments with dogs as did Beers in his experiments on the same animals I do not know. He and Beers will have to work that out. I have worked out Beers' results and they agree with the experience of Mayo and other surgeons who say that a kidney that has been leaking through an injured ureter for many weeks had better be removed. My patient was passing a half pint of urine through her vagina, therefore, I knew her kidney was functionating, but I did not know that if we reimplanted the ureter of such a kidney degenerative changes which had been started would continue in that kidney, that it would atrophy and make a lot of trouble, and that at some future time it might have to be removed. That is the point.

I could go on and answer all of the points made by the different speakers, but it is hardly necessary for me to do so. Dr. Ill's criticism is well taken, namely, why did I take the kidney out, as it was not in a very bad condition? To look at it, it did not seem to be in a bad condition, but think of the possibilities in connection with the case. She had a competent kidney. It was doing the work nature called for. I did not want to expose her to a big operation and perhaps fail and if she lived then later be compelled to take the kidney out.

Dr. Noble was particularly kind in helping me out. We worked out where the injury was by the cystoscopic examination. It was a big job to cut open a woman from the sternum to the pubes and find her ureter and reimplant it into her bladder. It is a mighty big undertaking, and fortunate for me I had the support of the Mayos in taking out the kidney, because I can do that as well as any of you. I am not a tyro in this type of surgery. I have done ninety-four vaginal hysterectomies. Why I prefer clamps in some cases and tie off in others is not a subject for discussion now. This accident to the ureter occurred when I least expected it. It can occur to some of you when you least expect it.

A LARGE CALCAREOUS FIBROID WITH ABSENCE OF OVARIES AND UTERINE LIGAMENTS.

BY

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(With Three Illustrations.)

SUCH anomalies as congenital malformations, displacements' double uterus or vagina, absence of one or both ovaries, vagina or uterus, or even absence of all the female generative organs, have been from time to time noticed and reported. Even though these phenomena are so comparatively rare, owing to the greatly increased number of operations upon the pelvic organs and our increased facilities for determining the causes of morbidity, these conditions should be borne in mind as the possible causes of symptoms that might otherwise be very obscure. A case which occurred in my practice a year ago seemed to be of unusual interest on account of the absence of all the uterine adnexa and where the growth of a large tumor had been supported apparently for many years by the scanty blood supply that entered it through two small arteries from the sheath of the vagina.

The patient was a violently insane single woman about sixty-five years of age who had been an inmate of the Hudson River State Hospital for the Insane about one year. Practically no previous history could be obtained. Her insanity had been classified by the staff as a senile psychosis. It was noticed by the hospital physicians that she had some form of abdominal tumor, but owing to her mental condition it had been impossible to form any idea as to its nature by questioning and any physical examination could only have been made by sheer force or under an anesthetic. This did not seem to be warranted until September 2, 1911, when she was seized quite suddenly with an attack of severe abdominal pain.

I was called in consultation with the staff physicians and under anesthesia we found a large, hard, unyielding mass occupying most of the abdominal cavity, but harder and more

prominent on the right side. Through the vagina there appeared to be a soft pulpy mass between the examining finger and the

Fig. 1.

unyielding and apparently immovable mass above. A median incision through the thin abdominal wall disclosed a large

blood red mass, studded here and there with calcareous nodules and having upon its left side, extending down into the pelvis, a blood red soft uterus which was the pulpy mass felt through the vagina. Upon the uterus were two irregular projections which could be easily recognized as the Fallopian tubes, also very much enlarged by vascular engorgement.

FIG 2.

When the incision had been made sufficiently large I found that I was able to lift the whole mass out of the abdomen and it dropped over the side of the pelvis, attached apparently only by a comparatively thin pedicle. Upon closer examination I found that this pedicle was simply the vaginal sheath and that there were no other attachments. The bladder was not at-

tached by either peritoneum or uterovesical ligaments. Neither was there any trace of ovaries, broad, or round ligaments. To make sure of the pedicle, a large sound which was introduced into the vagina readily passed up into the pedicle, which, due to the weight of the tumor, had stretched to at least 3 inches in length. The pedicle was then separated, the edges

Fig. 3.

inverted and sutured, after ligating two small arteries, the only blood supply to the whole mass.

The abdominal cavity contained a considerable quantity of bloody fluid, which was carefully sponged away, and the abdomen closed. Operation had no effect upon the patient's mental or physical condition, which, from a report from the hospital a few days ago was unchanged, one year after operation.

Dr. H. P. Carpenter, pathologist at the Hospital, examined the tumor and reported as follows:

"The tumor consisted of a large calcareous fibroid, the uterus and its tubes. The uterus was much enlarged, measuring 9 cm. transversely at its broadest point. The entire wall was soft and diffused with blood. The Fallopian tubes were also enormously thickened and infiltrated with blood. The tumor itself sprang from the right side of the uterus and measured 12 cm. in breadth, 10 cm. in thickness, and 20 cm. in length. On section it was composed of a fibrous capsule which was injected, enclosing an oval mass of calcareous material, somewhat mixed with fibrous tissue. At the junction of the tumor and the uterus there was a mass of engorged blood-vessels and small gelatinous cysts."

Was this condition necessarily congenital, or had it been brought about by pathological changes? In quite a considerable number of operations done upon this unfortunate class of patients, I have noticed that a comparatively large number of them are found to have imperfectly developed genital organs. Many of the young women have infantile uteri, small, imperfectly functionating ovaries, while uterine retroflexion or retroversion, or both, is almost a rule. Many of the older women are victims of uterine fibroids, severe lacerations or procidentia uteri, with its accompanying cystocele, etc. Now, if in the case I have reported this condition was caused by pathological and premature senile changes, might not a simple operation for the removal of the offending fibroid at the proper time have saved this woman, not only from the condition in which we found her, but also have saved her from an asylum for the insane?

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METRORRHAGIA DUE TO ATHEROMA OF THE UTERINE VESSELS.

BY

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METRORRHAGIA is essentially a symptom of some pathological condition either general or local. We should determine that pathology as accurately as possible before operation if we can, or by the use of the curet if necessary. The scrapings from every curetage should be examined microscopically by a competent pathologist. Only by this examination are we able to exclude malignant disease or to determine its presence in many cases.

The routine use of the curet by the general practitioner in cases of metrorrhagia and *without* microscopical examination of the scrapings, as is so often the practice, is to be severely condemned. Many cases of malignant disease are thus overlooked and after a second or third curetage done without relief from symptoms, the case comes to the surgeon with probably a well-advanced case of malignancy. Or the case may be one of those with which this paper more especially deals, that of sclerosis of the uterine vessels and in which repeated curetings have been done without relief but in which the true nature of the condition has not been determined.

Patients with this condition are usually nearing the climacteric, at the age when we may expect malignant disease. In an occasional younger patient the vessels generally may show premature sclerotic changes and the presence of these changes in patients with persistent metrorrhagia should place us on our guard.

The pathology is fairly definite and although the amount of hemorrhage may not always be in keeping with the degree of sclerosis in the vessels, yet we do find pathological changes in the blood-vessels with an accompanying general uterine fibrosis sufficient to account for the symptoms. The following pathological report by Dr. H. G. Palmer is fairly typical of the cases generally as we find them in our practice.

Pathological No. 2960. Specimen from uterus. Clinical diagnosis, sclerosis of uterine vessels. Pathological diagnosis, hyperplastic endometritis, sclerosis of uterine blood-vessels.

A uterus with appendages removed from a woman forty-two years of age. The uterus has been opened from cervix to fundus and has been in formol solution so that no opinion can be expressed of the gross appearance of the fresh specimen. The uterine canal measures 9 cm. from fundus to os, breadth 3.5 cm. at cornua, 2.5 cm. at internal os. The wall measures 24 mm. at fundus, 18 mm. at internal os.

Tissue for examination was taken from the cervix and wall from os to fundus.

Microscopic Examination.—There is a general thickening of the entire uterine wall due to two factors, viz.: increase in fibrous tissue of the uterine wall, increase in all of the essential elements of the endometrium. The endometrium presents a richly cellular stroma in which are present glands augmented both in number and size. These glands are often dilated but are generally round or oval in outline and are lined with a single layer of tall columnar epithelial cells. In a few instances there is considerable reduplication with cuboidal formed epithelium but this is always toward the lumen, invasion of the stroma being entirely absent. The endometrium is generously supplied with capillaries that are dilated and filled with blood cells.

The uterine wall shows a marked increase in fibrous tissue and this is especially marked in association with the blood-vessels, which are numerically increased. Occasionally there is an increase in volume with some cellular proliferation of the intima of the vessels, but this is the exception rather than the rule and the change as generally observed throughout the sections is a very marked increase of fibrous tissue, varying in density, involving the adventitia of the vessels. The fibrous tissue compresses the muscularis and is sufficient to disturb or possibly destroy vasomotor tone with a resultant uncontrollable hemorrhage. The condition would appear as not a primary disease of the vessels, for there is no true arterial degeneration and the intima is intact and generally normal, but the deposit of fibrous tissue in the adventitia constitutes a true disease that is considered resultant to, rather than the cause of, the general fibrosis.

The specimen was from a patient forty-two years of age. Has had nine children, oldest twenty-three years; youngest three years. Three miscarriages, last one twelve years ago.

For past six months has been flowing profusely every two weeks and flow lasting a full week. Heart and lungs negative. No general arterial change noted in history of this case. Urine cloudy, slightly acid, specific gravity 1014, slight trace of albumin. Sediment shows amorphous urates, squamous cells and blood cells, no casts.

Pathology.—Examination of the uteri of this class of cases shows an increase in the fibrous tissue between the muscle bundles and in many cases there is a diminished musculature, the muscle bundles having been replaced by fibrous tissue. In other uteri there is an increase of both the musculature and the fibrous elements; the condition is generally a true metaplasia. The blood-vessels appear to be numerically increased but whether this is a fact is questionable. The greatest change in the vessels appears to be in the adventitia and media, the latter being thinned from displacement of muscular by fibrous elements and there is a decided increase in the adventitia from the hyperplasia of fibrous tissue of the adventitia itself and an apparent increase outside about the vessel. The intima is not involved and the lumen of the vessel is not occluded nor diminished in caliber. This should make it possible to rule out syphilis as an etiological factor, for in the latter condition it is the intima which is especially involved and in which the changes are so typical. The condition is more in the nature of a sclerosis or fibrosis than a true atheroma and is met with more frequently than the latter condition, although I believe that a true atheroma would be the ultimate termination of the pathological process if allowed to go on. We do occasionally find a case of true atheroma in which macroscopically the uterine vessels are decidedly hard and brittle and show a typical atheromatous condition. These cases are usually in much older women and there is an accompanying general arterial degeneration.

The gross pathology is also rather typical. The uterus is larger than normal, is flabby from constant congestion. Upon section the vessels are more numerous than normal and the cut vessels stand out prominently above the surface of the uterine tissue.

That there are sufficient pathological changes present to prevent the proper response to vasomotor stimuli, seems apparent. The vessels have lost their muscular tone and power of contractility due to the increase of fibrous elements in and about the adventitia and a definite loss of muscular elements.

In a most admirable article by Gardner and Goodall on "Chronic Metritis and Arteriosclerotic Uterus," they say that "the hemorrhage in arteriosclerotic uteri is due to pelvic congestion and high arterial tension, with lack of contractility of the vessels in response to vasomotor stimuli, combined with muscular atrophy of the uterine wall."

The symptoms are as follows: A woman at or near the menopause is having constant or repeated severe hemorrhages. Examination shows a soft uterus, usually with the external os patulous and the canal roughened. This roughening is due, I think, to the prolonged congestion with the accompanying endometritis and the fact that most of our cases are in multiparæ. The picture at first suggests malignancy, yet our scrapings may show only a simple endometritis. Or our patient may give a history of previous curetings with negative reports and with no relief from symptoms. Usually the symptoms have persisted for a long time, yet there is no apparent loss of flesh and although the patient is anemic there is not that typical cachexia of long-standing malignant disease. The condition which simulates it most closely is that of submucous fibroid without the presence of other palpable fibroids, intramural or subperitoneal. The writer has on more than one occasion made a diagnosis of probable submucous fibroid only to find upon hysterectomy that there was no sign of fibroid, although it was noted that the gross pathology was that of general fibrosis with the vessels standing out prominently upon section of the uterine wall.

Diagnosis of the condition in question may be made before operation if we bear in mind that there is such a condition and that it exists frequently. That cases of intractible hemorrhage occurring at or near the menopause and unrelieved by curetage and in which the scrapings from that curetage show no evidences of malignant disease, may be instances of this sort. We must take into consideration that general arterial changes may occur in these cases and that upon vaginal examination they show an enlarged, softened, freely movable uterus, with os often patulous, and with no evidences of disease in the appendages or periuterine tissues.

Hysterectomy should be the treatment of these cases and should be performed before they have advanced so far that very marked arterial changes have occurred. General or topical medication is of no avail and any resort to such treatment after

we have made up our minds that it is a case of sclerosis of the vessels with fibrosis, is but a waste of valuable time.

The writer has purposely not gone into those cases of metritis, endometritis, diseases of the adnexa and associated conditions which may be a cause of metrorrhagia, as it has been the aim of this paper to call attention to this particular pathology, to the fact that we do find it rather frequently and that when it does exist, radical operation is the treatment.

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DISCUSSION ON THE PAPER OF DR. JONES.

Dr. Charles A. L. Reed, Cincinnati.—I wish to express my appreciation of the paper just read. It is a subject to which very little attention has been given. Leopold called attention to it in the seventies. Since that time, it received attention by Tuffier. Leopold's position, however, was that these cases were sometimes atheromatous, and we occasionally hear of atheromatous conditions of the pelvic arteries and of the uterus.

In the last two years I have had occasion to encounter some very annoying cases of this particular type. In one or two of them, after treatment for six or eight months by repeated curetages, I was rewarded by having small fibroids extruded from the parenchyma into the uterus, or small polypi, which seemed to explain the condition. After removal, the hemorrhage stopped for a time, but only sooner or later to recur. In both of these cases a radical operation was declined.

Touching the pathology which has been so admirably presented this afternoon, we are left in doubt as to the sequence of events in the evolution of the condition. In other words, we find the tunica adventitia and tunica media of the two arteries have lost their elasticity because of certain fibroid changes which, according to the histological story, manifest themselves in the parenchyma of the vessels themselves. Therefore, we are forced to the conclusion that while these arteries are sclerotic and lose their ability to respond to the vasomotor stimuli, the fact remains that probably we classify the uteri as essentially those that take on fibrosis, a point recognized differentially by the essayist himself. This takes us back to another factor to which Leopold called attention, namely, that these changes occurred chiefly in women who had borne children. They, therefore, take us back to the old story of the hyperplasias that were set forth in a very

attractive theory of pathologic enlargements. I think, however, that the profession has recognized, in a more or less desultory way, the existence of this pathologic state—this arteriosclerosis of the uterus—but not in that specific way that we shall if we have a few contributions such as this offered to us this afternoon. I feel we are indebted to the author for this contribution, for it takes us away from questions of technic and gets us into something that is of real fundamental importance.

Dr. Hugo O. Pantzer, Indianapolis.—Virchow was the first to report sclerotic uterine arteries as the primary seat of atheroma in a woman of some twenty years, who had died shortly after parturition.

About twenty years ago, I had a case of persistent uterine hemorrhage, in a patient of about forty-five years, which at operation revealed pipe-stem arteries. The uterine artery broke repeatedly as it was being tied successively further into the broad ligament. The ligature that finally held, came to be placed near the lateral pelvic wall.

Dr. William H. Humiston, Cleveland.—There is one point I wish to refer to, and that is the necessity for a routine examination of the scrapings of every uterus that has been cureted. Unless you make this, as a rule, and adopt it you are very likely to overlook many of these conditions, especially early malignancy. In every case in which I scrape the uterus the scrapings are sent to the pathological laboratory, and in about one in forty instances there is beginning malignancy, and when a complete hysterectomy is done in such instances it is attended with the best result.

Dr. Miles F. Porter, Ft. Wayne.—I have made two or three clinical observations which seem to show the connection between thyroid changes and uterine hemorrhages in young people. I do not know enough to say anything about it definitely, but I would suggest a careful clinical and pathological inquiry be made along the line of the possible relationship between the pathology occurring in the thyroid and the changes occurring in the uterus that lead to hemorrhages as yet unexplained, and especially does this apply in my mind to those hemorrhages that occur in young women that are not married.

Dr. Charles A. L. Reed, Cincinnati.—I would like to ask the author of the paper to explain to us the technic by which he discovers the sclerosis of the arteries by the scrapings. I have been unable to do that in Cincinnati.

Dr. Jones.—I did not mean to convey that idea that I could. The examination of the scrapings may help to make the diagnosis by exclusion.

INDICATIONS AND TECHNIC IN GASTRIC RESECTION AND GASTROENTEROSTOMY.

BY
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It is the purpose of this paper to consider the following points: In what type of gastric and of duodenal ulcers shall resection be made? in what type shall gastroenterostomy be made? and in what type jejunostomy? What type of management gives the best results in cases handicapped by hemorrhage and starvation? what is the significance of acetonuria? what method of suturing will make the strongest union? lastly, how can shock be reduced to a minimum? Discussing the last point first, the combination of nitrous oxide, general anesthesia and novocaine, local anesthesia and quinine, and urea hydrochloride as a postoperative anesthesia combined with ample incision and gentle handling establishes *anociassociation*—or shockless operation.

Starved and Anemic Patients.—A preliminary transfusion of blood brings back the vitality of patients exsanguinated by hemorrhages and make then good risks, thus the surgeon may reclaim the bad risks in hemorrhage from ulcer of the stomach or duodenum.

In starvation cases the risk cannot be so successfully reclaimed though the patient may be much improved by transfusion. The risk in these cases is not shock and depression but a broken metabolism expressing itself as acidosis.

Since employing transfusion I have had the opportunity of seeing more clearly the dangers of acidosis, for I have operated on cases all but moribund and have seen them pass through the operation unchanged, and have seen metabolic death follow. Heretofore such cases would not have been operated, and if operated would not have survived long enough for study. There is a stage of acidosis rather easily recognizable which proves fatal as a metabolic process in spite of complete control of the blood volume, and measurably of the blood pressure. This does not in the least apply to acute or chronic hemorrhage. Here transfusion gives an absolute control.

Suturing—The technic of suturing that will hold even edematous visceral walls is an adaptation of the oldest known stitch, viz., the shoemaker or cobbler stitch. A typical shoemaker's stitch may be introduced throughout the entire wound. The stitch becomes an interrupted continuous stitch by tying the sutures several times on each lap and at the corners. A running peritoneal stitch as a second row completes the suturing. It will be at once apparent that this stitch piercing as it does every layer, and so utilizing every atom of the strength of the visceral wall, must be the strongest stitch and will not permit either leakage or hemorrhage. Turning now to the indications in cancer and ulcer we propose the following: In cancer palpable glands may be only inflammatory, if the liver is free, if there is no local invasion of surrounding tissue then resection and gastroenterostomy is indicated; if the patient is seriously weakened by starvation, and is still operable, then a two-stage operation is made. First, a gastroenterostomy and as soon as the metabolic balance is restored, usually in ten days to two weeks, resection is made. In starved cases of ulcer the method of Prof. Von Eiselsberg, viz., making a jejunostomy under local anesthesia then feeding until a safe vital margin is reached, then operate is excellent. But Prof. Von Eiselsberg has found that if the jejunal fistula is maintained for from six to nine months gastric ulcer may be cured. Perhaps the most difficult type of gastric ulcer is that known as saddle ulcer. Gastroenterostomy is of doubtful value; Von Eiselsberg's method though apparently curative is tedious and does not protect against subsequent cancer; medical treatment has of course proven futile. In these cases the German surgeon would make a transverse resection because if a local resection were made the stitch tension would result in leakage. I have found the apparent solution to these cases in the use of the cobbler stitch in the following manner:

First, an ample opening is made into the stomach through a healthy portion of the wall avoiding the larger blood-vessels.

Second, the saddle ulcer is pressed through this opening from behind.

Third, then using a "needle at each end" thread, a cobbler stitch is securely inserted.

Fourth, the entire ulcer is now cut away free from the stitch line.

Fifth, the first incision is closed. I do not believe that any suture excepting one of the through-and-through type—especially

the cobbler stitch—would hold. I have found this stitch amply strong.

Bleeding is controlled by distal clamping of the arteries.

In choosing the type of operation in gastric ulcers, because of the uncertain cure by gastroenterostomy and the probabilty of cancer, it must be borne in mind that excision is the operation of choice. In duodenal ulcers there is slight probability of cancer sequence, and the ulcer is curable by gastroenterostomy. Cure is perhaps hastened by temporary closure of the pylorus.

Clinical Results.—In my personal experience, and that of my associates, Dr. Bunts, F. E, and Dr. W. E. Lower, as well as the Lakeside Hospital records, there are notes on 420 operations for gastric and duodenal lesions. Of these, 208 were performed for cancer; 204 for benign obstructions and ulcers and eight for traumatic perforations.

Summarizing our experience I can say that all duodenal ulcers are cured; congenital stenosis is cured; acute gastric ulcers in the lesser curvature and the cardia treated by gastroenterostomy are often disappointing, but resection cures; in cancer the cures depend on the status of the lesion; resection of gastric ulcer of the sadd type is not only safe but the results are clinically good.

Transfusion of blood in cases of hemorrhage, the mastery of the cobble stitch in all parts of the operations; the performance of shockless operations on the principle of anociassociation has, now given an almost complete control over the operative results in gastric surgery.

STENOSIS OF THE PYLORUS IN INFANCY.

BY

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Providence, R. I.

(With Eight Illustrations.)

PYLORIC stenosis is now recognized as a definite pathological entity consisting of a true hypertrophy of the musculature of the pylorus. It usually occurs in well-nourished infants and among those breast fed as well as those bottle fed.

An accurate description of this condition may be found as early as 1841. Lobker in 1898 was the first to operate successfully for hypertrophic stenosis of the pylorus in an infant. Since then numerous monographs have appeared on the subject with Koplik, Nicoll, Scudder, Still, Richter, Bevan, Bunts, Stiles, Cautley and others as the authors.

There has been considerable discussion as to the etiology of pyloric stenosis in infants. It is said to be due to faulty embryological development and may be associated with other congenital deformities, which would make it appear that the condition is congenital. Dent found stenosis of the pylorus in a seven months' fetus. Undoubtedly there are cases of true pyloric spasm without muscular hypertrophy. These cases often show an excess of acid in the stomach, while the cases of hypertrophy have only the normal amount of acid present.

Stenosis of the pylorus is due to a hyperplasia of the circular and to a lesser degree of the longitudinal muscular fibers of the pylorus, which produces a longitudinal folding and swelling of the mucosa, thus obstructing the lumen of the pylorus. It is possible that pyloric spasm may accompany some cases of hypertrophy of the muscularis of the pylorus.

Cases of true hypertrophy involving the pylorus reveal a firm tumor, white in color, of cartilaginous consistency and about the size of a small olive. Microscopical examination shows this mass to consist principally of an hypertrophy of the circular muscular fibers of the pylorus. Cunningham, however, has found the longitudinal muscle hypertrophied as well. The

mucosa is found swollen and thrown into longitudinal folds. The pyloric opening may admit only a small probe but its caliber is always found diminished. There is never evidence of an inflammatory process.

The stomach may be found dilated and with thickened walls, or the walls may be much thinner than normal, due to excessive dilatation of the stomach. The intestine is collapsed and empty. The upper half of the abdomen appears full with a depression of the lower half.

Within a few days to a few weeks after birth an infant normal in weight and appearance will vomit the ingested milk; relief then follows and sleep often ensues. Later the intervals between the attacks of vomiting become lessened until all fluid taken is rejected. The vomiting becomes projectile in character and may occur immediately after a feeding or be delayed a half hour or more. The amount vomited may be greater than the quantity taken at a feeding, owing to the retention of a part of a former feeding.

The stomach contents show a normal degree of acidity. There is progressive loss in weight. Obstinate constipation is a noteworthy symptom. The stools resemble meconium or they may show evidence of the digestion of milk, should the pyloric opening be narrowed but not completely obstructed.

Violent peristalsis of the stomach, the waves passing from the cardiac end of the stomach toward the pylorus, may be seen shortly after the ingestion of food or the waves may be elicited by tapping over the stomach with the finger. The urine is diminished in quantity.

A hard tumor may usually be felt at the site of the pylorus, but the liver may so cover the tumor that it cannot be palpated. The *x*-ray may aid us by showing no shadow at the site of the duodenum after the ingestion of a solution of the subcarbonate of bismuth and milk.

Differential Diagnosis.—The cases of pyloric spasm are less acute. Stools show the passage of food into the intestine followed by symptoms of obstruction and later food once more in the intestine. There are intervals of improvement. Diarrhea may be noted. Symptoms usually begin later, from one to six months after birth. While with pyloric stenosis the onset is early, the wasting rapid, there is less pain, the cry is that of hunger, the tongue is more coated and the vomiting is projectile rather than regurgitant, there is no increase in acidity of the

stomach contents, there is obstinate constipation, palpable tumor and definite stomach peristalsis. We may have difficulty in making a diagnosis between pyloric spasm and hypertrophic stenosis of the pylorus in certain border line cases.

I would advocate, in cases of pyloric spasm, after a fair trial of food regulation and resorting to other medical measures with no relief, opening the abdomen and relieving the spasm of the pylorus by making a small longitudinal incision through the peritoneal and muscular coats of the pylorus down to the mucosa and uniting the incision in a transverse direction.

The medical measures that may be adopted in cases of pyloric stenosis are attention to the character of the food, the time of feeding and the quantity at each feeding, stomach lavage, opium, poultices to epigastrium, saline and nutrient enemata.

Prolonged medical treatment increases our operative risk as we may lose valuable time. The chief cause of death may be attributed to delay in operating.

Dr. Max Einhorn reports two cases, one recovery and one death, where he employed a very ingenious method of dilating the pylorus. He stretches the pylorus by means of an inflatable dilating pyloric catheter.

There is considerable puestion as to the permanency of the cure obtained in well-marked cases of hypertrophic stenosis by attention to feeding and medical measures.

It is now conceded by most observers that surgery offers the best chance for life in infants with stenosis of the pylorus.

Several operations have been devised, namely, divulsion, pyloroplasty, and pyloroplasty with divulsion and gastroenterostomy. All admit that early operation is desirable.

Loreta's method of divulsion is described as follows: "Expose the pylorus, open the stomach near the pylorus and through this wound pass the finger, a bougie or forceps, into the pyloric opening and forcibly dilate it." Nicoll reports seven ceses operated by this method, five cases cured, no relief in two. Still reports nine cases operated by divulsion with but one death.

Some of the objections to this procedure that may be mentioned are that it may be impossible to pass the finger, a bougie or forceps into the pyloric canal, as the latter may be so small as

only to admit a probe. The peritoneum and muscular fibers are ruptured and the mucous membrane is contused and lacerated. A case is reported by Nicoll where the forceps passed through the pyloric canal and penetrated the duodenum causing a fatal result.

Nicoll describes his method of pyloroplasty with divulsion as follows: "Expose the pyloric region. Apply rubber-covered

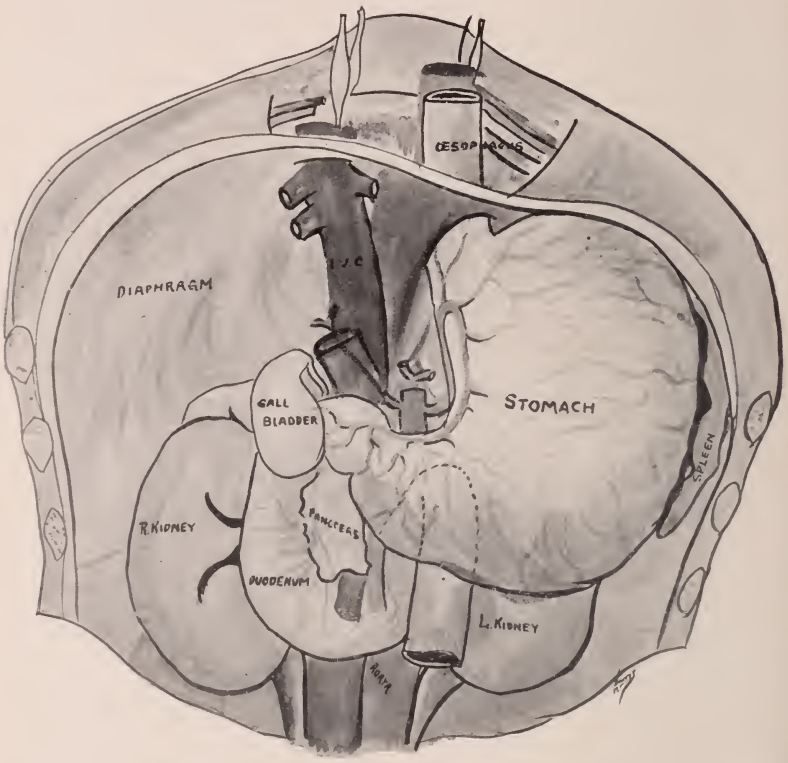

FIG. 1.—Liver removed to show relations of stomach, gall-bladder and duodenum.

clamps to the stomach and duodenum. Open the stomach and through this opening pass a closed artery clamp into the pyloric lumen. Dilate the pylorus by using the forceps as a glove stretcher. Make a V incision through the wall of the pylorus down to the mucosa, convert the V into a Y by sutures. Close the puncture in the stomach."

Another method is described by Nicoll: "Omit the incision into the stomach. Make an incision through the whole wall, mucosa

included, of the pylorus. Through this incision pass the artery forceps and divulse. Convert the V into a Y by sutures." There must be undue laceration of the mucosa and muscle by this method with great danger of infection of the wound.

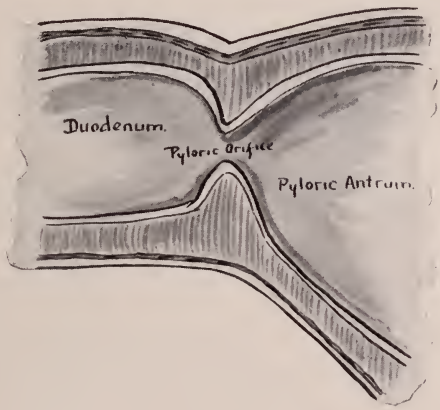

FIG. 2.—Semi-diagramatic vertical section of junction of stomach and duodenum showing disposition of coats.

Gastrojejunostomy, both the anterior and posterior methods, have been employed for the cure of pyloric stenosis. The no-

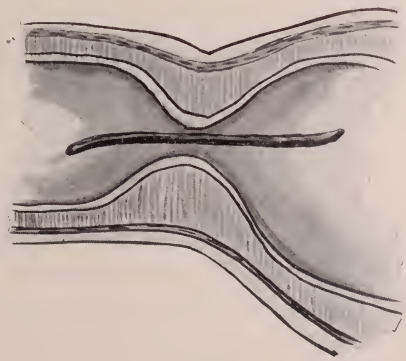

FIG. 3.

loop gastrojejunostomy is the choice of the greater number of surgeons who have operated for this condition.

This operation is much more readily performed upon the adult than upon an emaciated infant with a collapsed small intestine

of small caliber. Intestinal clamps may crush the thin walls of the jejunum and cause subsequent sloughing. However, the operation may be completed without the use of the clamps. Very fine needles and silk should be used on account of the exceedingly thin walls of the jejunum.

Gastrojejunostomy upon a weak, starving infant as a subject is a decidedly serious operation. It does not directly remedy the stenosis. Bile and pancreatic juice may enter the stomach through the stoma and thus interfere with the digestive processes.

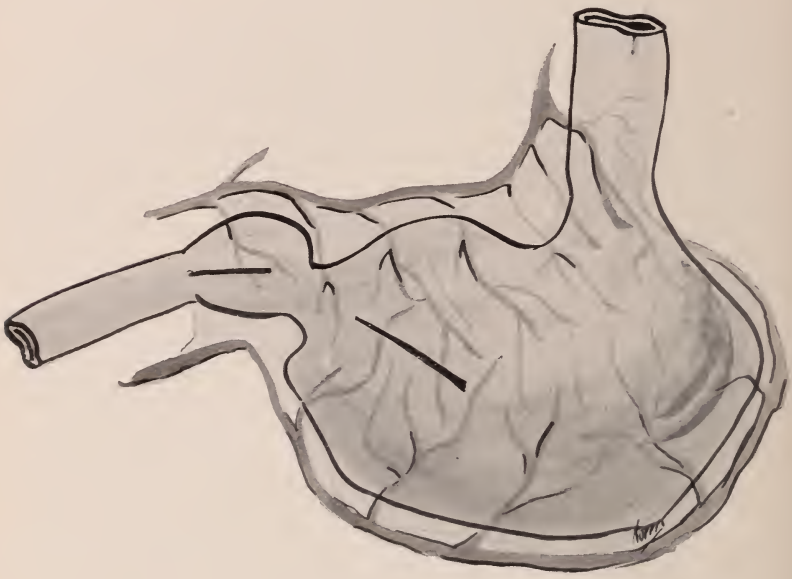

Fig. 4.—Lines of incision.

Wohlbach, six and one-half months after a gastrojejunostomy had been performed for pyloric stenosis in an infant, made an autopsy and says that "the pyloric tumor persisted and appeared as at the time of the operation."

Richter reports eleven cases of gastrojejunostomy for the cure of pyloric stenosis. Two were cases of pyloric spasm. One patient died on the fifth day following operation from a volvulus. Another died seven and one-half months after operation from intestinal obstruction from a kink caused by adhesions.

Cannon and Blake in 1905 stated that "it was important that food be mixed with the secretions poured into the duodenum,

that these juices are highly effective in digestion and also neutralize the acid chyme."

Jejunal ulcers may follow gastrojejunostomy and these ulcers may be due to the presence of acids in a region where inorganic acid is not normally found. Moynihan mentioned having known sixty cases of jejunal ulcer.

The physiological relations between the stomach, pylorus and duodenum are disturbed by a gastrojejunostomy. The high mortality following gastrojejunostomy for pyloric stenosis in

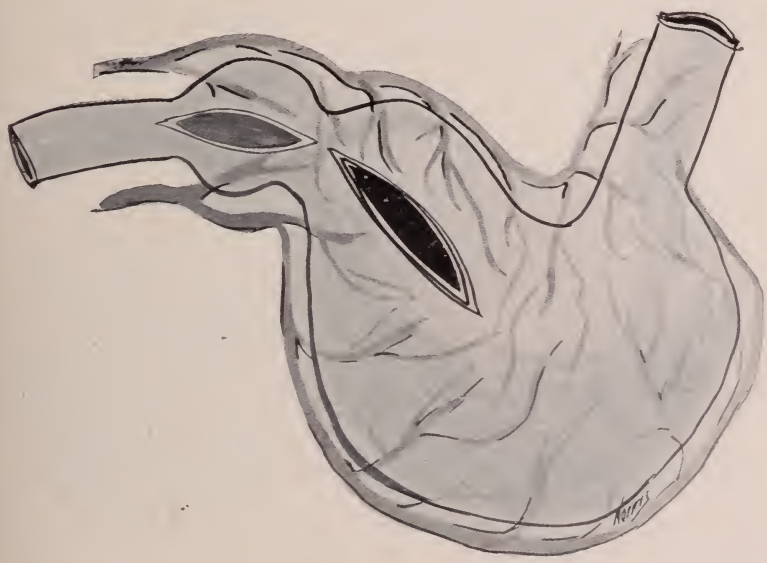

FIG. 5.—Showing opening into stomach through all three coats and pyloric opening down to mucosa.

infants varies with the period at which the operation is done, the skill of the surgeon, the resistance and general condition of the patient. These are all important facts to be considered when selecting the operation best suited to the case.

Scudder reports a 7 per cent. mortality. Among Bunt's personal cases four recovered, three died. In Bunt's collection of cases, fifty-three recovered, sixty-one died. Nicoll states that the mortality is about 50 per cent. Fridet and Guillmot report two cases of recovery by making a straight longitudinal incision of the pylorus down to the mucosa. The lips of the incision are then drawn apart and sutured together to form a transverse line. Weber also reports two similar cases. This operation

they call partial pylorotomy and of thirty-eight cases collected the mortality was only 26.31 per cent.

The temperature of the room before, during and after operation is important. It should be maintained between 85 and 90° F. There should be as little exposure of the patient to draughts and cold as is possible. Before operation lavage of the stomach and preparation of the operation field. Warm clothing and heaters should be placed about the patient during the operation.

The last case that I here report was operated upon in the following manner. A vertical incision was made through the right rectus muscle into the abdominal cavity which exposed the

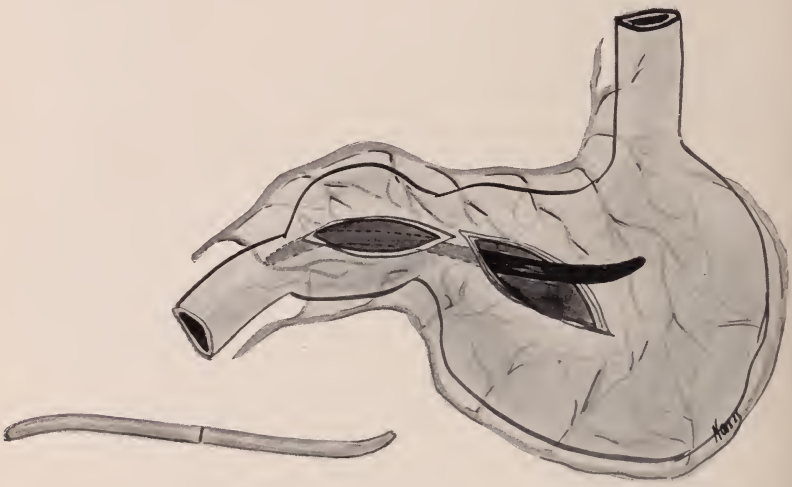

Fig. 6.—Hank's dilator in stomach opening and dilating pyloric constriction, incision at constriction allowing mucosa to unfold and relieve external tension.

pyloric tumor. We did not find it necessary to apply clamps to the stomach or duodenum. An opening 1/2 inch long was made in the stomach about 1 inch from the pylorus. A small-sized steel Hanks' sound, about the size No. 14 French was passed through the stomach wound and pyloric opening. The sound was left in position and with a knife the peritoneum and circular muscular fibers forming the pyloric tumor were incised parallel with the long axis of the pylorus, down to but not including the mucosa. The hypertrophied muscle was now separated from the mucosa laterally over half the circumference of the pylorus and a small portion of the muscle on either side removed, which allowed accurate transverse approximation of the wound. This procedure allowed the subsequent

easy passage, in turn, of the different sized smooth steel sounds until the pyloric opening was sufficiently patulous. The longitudinal folds of mucous membrane of the pylorus were unfolded without injury to the mucosa.

One will be surprised to find how readily the sounds, increasing in size, can be passed after the hypertrophied muscle which resembles soft gristle, has been incised and separated from the mucosa.

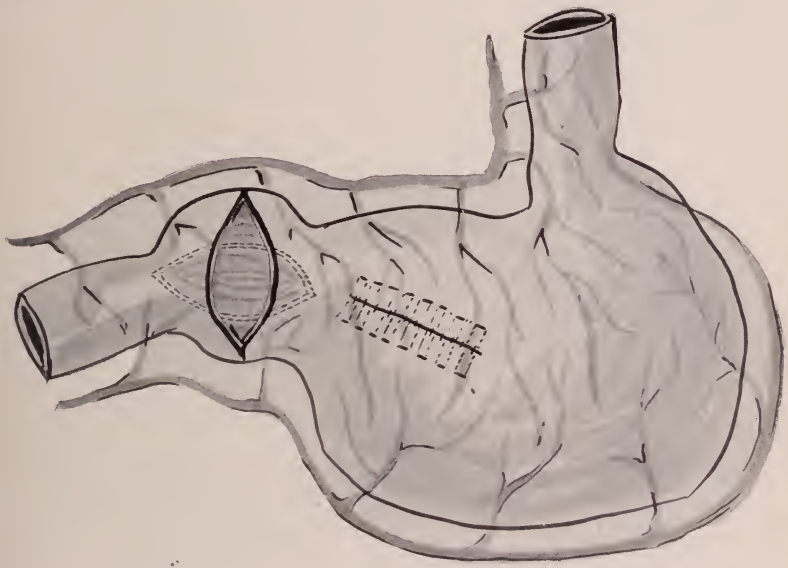

FIG. 7.—Removal of part of external and middle coats over pylorus allowing incision to be closed vertically, thus smoothing out longitudinal folds in mucosa.

The longitudinal incision through the peritoneum and muscle of the pylorus was closed with interrupted and Lembert sutures, so that the line of union was at a right angle to the long axis of the pylorus. This results in making the pylorus wider at this point than it was previous to the operation. The abdominal wound and the wound in the stomach were closed with two rows of sutures.

It is generally accepted that we should conform as closely as possible to physiological and anatomical conditions and whenever we are able to do so we should attack a disease at its source.

I believe that partial pylorotomy, or pyloroplasty alone, or either aided by gradual dilatation with sounds passed through an opening in the stomach and the pylorus after the hypertrophied muscle has been incised, separated from the mucosa

and a portion equal to about one-half the circumference of the pylorus removed, should be the operation of choice.

The results have been shown to be excellent and the parts are restored to a practically normal condition.

I wish to again call your attention to the desirability of incising the circular musculature of the pylorus for pyloric spasm which does not respond readily to treatment.

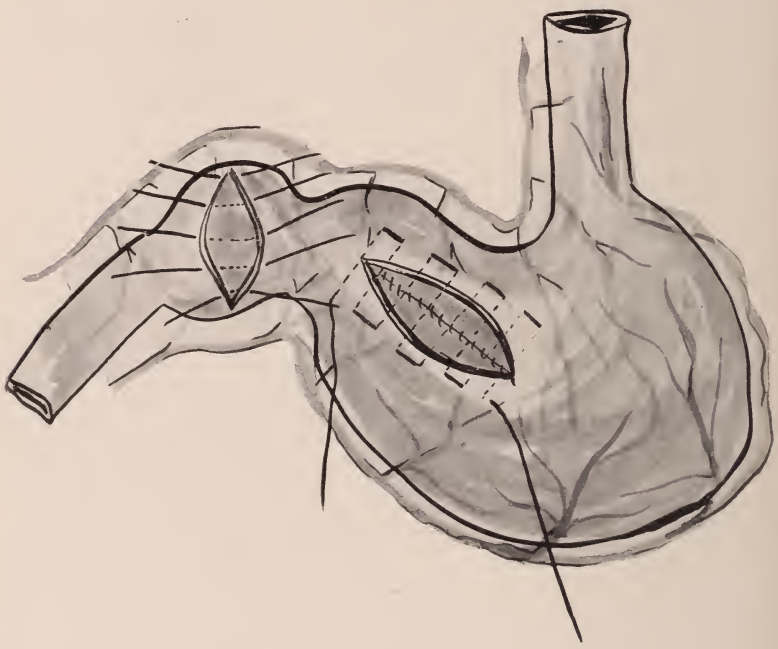

Fig. 8.—Closure of incisions.

B. J. T., a male infant was born May 31, 1905. He appeared to be a strong, perfectly well-developed child, weighing 8 1/4 pounds. By June 11 he weighed 8 1/2 pounds but from that time he commenced to lose weight rapidly.

He vomited the mother's milk from the first, usually the milk from one breast more than the other, but the fact that one breast furnishd more milk than its fellow and in consequence of the infant receiving a larger feeding from the breast when the milk came freely, may account for this condition.

June 19, he was given modified milk and later barley water, koumis, etc. June 21 Dr. John W. Mitchell, the attending physician, called Dr. Edward T. Walker in consultation and the

next day the patient was also seen by Dr. Charles Putnam of Boston, who said that the patient was either suffering from improper food or a stenosis of the pylorus. A wet nurse was then employed but the vomiting continued.

The vomiting occurred shortly after the ingestion of food and was projectile in character, the food being shot out of the mouth. The vomitus consisted of milk and mucus, no bile found.

I was called to see the infant by Dr. Mitchell, June 24, 1905; he was then three and one-half weeks old and weighed 6 pounds and 12 ounces. He has vomited all of the various foods given him from birth. Sometimes he vomited immediately after taking food and at other times the food might remain in the stomach for one-half hour. He was fretful most of the time but after emptying the stomach he seemed relieved and would go to sleep. Upon waking he was greedy for food. Contrary to the rule, his bowels moved freely and lately the stools were greenish in color with very offensive odor. He was very much emaciated, his ribs being very prominent due to the lack of nutrition. There was visible peristalsis of the stomach; the peristaltic waves passed from the cardiac end of the stomach toward the pylorus. No tumor could be felt by palpation.

Operation: A median incision 2 inches long, beginning just below the ensiform cartilage, was made, which revealed a nonadherent, hard, pyloric tumor, about the consistency of gristle, measuring 3 cm. in length by 1 cm. in diameter. The stomach wall was hypertrophied and the intestine collapsed.

An incision was made 1 inch from the pyloric end of the stomach and through this opening a steel sound, No. 14 French scale, was passed into the pyloric opening. The peritoneum over the pyloric tumor was split and a longitudinal incision was then made, with a knife, through the muscle down to the mucosa. Other sounds were then passed through the stomach wound and the pylorus into the duodenum. The largest size used was No. 25, French scale. The ends of the wound of the pylorus were brought together with Pagenstecher thread and the peritoneum and muscles were so united that the line of suture was transverse, which increased the diameter of the pylorus. The opening in the stomach was closed with two rows of interrupted Lembert sutures and the abdominal wall closed in layers.

Saline enemas were given and rectal feeding commenced shortly after operation. Within an hour he suffered severely

from shock and was given minute doses of strychnia. He was given the wet nurse's milk with the aid of a medicine dropper.

June 29 the stitch in the skin was removed and on July 3 a small intramural abscess was opened, which healed in a short time.

July 15 he weighed 7 pounds and 5 ounces, although he continued to vomit considerably. He was again seen by Dr. Putnam with Dr. Mitchell and the former advised gastrojejunostomy unless he improved.

July 20 another wet nurse, a negress, nineteen years old, was employed. Her milk agreed perfectly with our patient and the vomiting ceased. Six days later the weight was 8 pounds and 3 ounces. Some weeks later in August, 1 pound a week was gained. Weight October 30 was 17 pounds and 5 ounces. Weight December 30 was 19 pounds and 14 1/2 ounces. During the latter part of December two teeth appeared.

January 28, 1906, the weight was 19 pounds and 1 ounce. Two weeks ago it was thought advisable to wean the child as the wet nurse's babe was about eleven months old (one year old March 6, 1906) and the quantity of milk diminishing. Modified milk was given, consisting of cow's milk, sugar of milk and lime water. This was immediately rejected while the wet nurse's milk was retained even when from 3 to 9 ounces were taken at a feeding, showing that it was the quality of the food and not the narrowing of the pylorus that caused the vomiting and the diminution in weight. The fact that the infant is teething may have some bearing in the case.

September 12, 1912. The infant continued to do well and is now a strong and rugged boy over seven years of age.

I. J. M., third., Dr. Wilson's patient, born September 2, 1911. Weight 9 1/2 pounds. Healthy looking infant. He was fed at the breast for three weeks when he commenced to vomit. The vomiting spells became more frequent and at the end of a week nothing was retained.

Consultation with Dr. Jordan, diagnosis incomplete pyloric stenosis. Treatment recommended. Vomiting ceased for twelve hours then returned and continued for three days. Case transferred to Dr. Jordan.

The baby, with regulation of food, was fed 2 ounces every two hours and did not vomit for one week. Then the pyloric opening closed completely. Projectile vomiting. Loss of weight. Constipation. Careful examination revealed a small

tumor about 1 inch to the right of the median line midway between the umbilicus and the costal margin. Visible peristalsis was very plain.

I saw the case with Dr. Jordan and operated at the Saint Joseph's Hospital, October 8, 1911. The infant was five weeks and two days old. Weight 6 pounds and 10 ounces. Pyloroplasty with passage of dilators into the pylorus through an opening made in the stomach. Excision of a portion of the hypertrophied muscle of the pylorus.

Good recovery from ether anesthesia. No shock. Twelve hours afterward was fed in 1/2 ounce amounts. He was fed artificially on cow's milk modified. He made a complete recovery, going home from the hospital in one week. His weight increased on an average of 1/2 pound each week.

December 14, 1911, he weighed 10 pounds and 12 ounces. He has had no digestive disturbance since. He weighed, January 13, 1912, 13 pounds.

Septmeber 12, 1912. The infant has steadily improved and is to-day strong and healthy.

259 Benifit Street.

DISCUSSION ON THE PAPERS OF DRS. CRILE AND KEEFE.

Dr. H. W. Longyear, Detroit.—I would like to ask Dr. Keefe what material he used in closing these cases.

Dr. Keefe.—In answer to Dr. Longyear I will say I used catgut on the mucous surface of the stomach and Pagenstecher thread for the peritoneum, and in closing the pylorus I used the same.

This drawing represents the other operation of opening the stomach and the method of making the incision, with the transverse method of closing.

Dr. Crile.—Did you do that in both cases?

Dr. Keefe.—Yes. I had not read anything about the subject when I operated upon the first case. The idea is to separate the hypertrophied muscles from the mucosa halfway about the stomach. It is difficult to make a transverse approximation on account of rigidity and hardness of the tissue between the margins, but by excising this material for half of the circumference you can overcome this objection. By divulsion you burst through the structures. In the first case in which I dilated with sounds, I noticed that the peritoneum commenced to give way, so I incised with the knife down to the mucosa. In the next case I did the work with a little more deliberation, and in that instance I incised at once after passing a small-sized sound through, and before I dilated I made the incision right over the pyloric tumor down

to the mucosa, separated the mucosa from the cartilaginous mass, took out a portion of the hypertrophied muscle on either side, and then passed a larger sound which proved that I had a large patulous pyloric opening, and this operation may be done at the pylorus and the opening in the stomach omitted. This portion of the operation of excising has to my knowledge not been done before.

Dr. J. Henry Carstens, Detroit.—I have tried the course that has been pursued by Dr. Keefe, and I think it would be an ideal operation to cut through the various muscles, and not the tissue of the mucosa. It would stretch and we would not open the stomach. On two of these cases where there was stenosis as the result of ulcer I operated with the McGraw ligature, and in those two cases I had splendid results.

With reference to the paper of Dr. Crile, I must say I have always been on the fence, and I did not know that to do with these stomach ulcers. Now in an ulcer of the stomach, what do you do? Cut it out, trim it out, and do a gastroenterostomy? I wish Dr. Crile in his closing remarks would bring out his method of dealing with these cases. For instance, if you have a large ulcer to deal with, with the mucous membrane all gone, it seems to me it would be a good thing to cut away the peritoneum, trim the edges and bring the mucous membrane carefully together, instead of to just leave the ulcer alone and do a gastroenterostomy. Before the ulcer has perforated you can cut away all the peritoneal covering and trim the edges, drain the wound, and bring the ends together. Otherwise I have done gastroenterostomy in such cases.

Somebody made the remark this morning that he used catgut. I have sometimes used catgut, and catgut is not the thing to use for intestinal surgery. A great many years ago in doing an enterostomy I simply took catgut, made a running suture and brought the ends together, the mucous membrane, the serous coat and muscles, and then amplified that by a Lembert suture of silk. I now use Pagenstecher linen. I do not think that the amplifying Lembert suture put on there should be of catgut because it dissolves too quickly. We talk about ten-day or twenty-day catgut, but catgut varies so much. Some people digest catgut just as quickly as they digest an ordinary meal, and for that reason I never trust myself in doing any intestinal surgery without having amplified by a good strong linen Lembert suture.

Dr. Francis Reder, St. Louis.—In connection with these papers I desire to relate a case which occurred in my practice. A woman was brought to me on account of a "stomach trouble" which she had for a number of years. Pain and vomiting after eating was the principle feature of her case. Upon opening the abdomen, the gall-bladder was found well filled and free from stones. Adhesions were extensive and readily separated. A gastroenterostomy was performed. I was able to introduce my

finger with some difficulty into the pyloric opening. The woman was in the hospital for two weeks, and during that time was free from pain and vomiting. She was hungry and able to eat. Five weeks after her discharge from the hospital she again began to have pain and vomiting and the clinical picture was precisely the same as the one before the operation. She again came to the hospital, and the afferent and efferent loops of the intestine were united. Again vomiting ceased, and the woman left the hospital within four weeks. Three weeks after returning home she was again taken back to the hospital on account of pain and vomiting and an exclusion operation performed by severing the duodenum at the junction with the stomach. This was about eight months ago. The woman has not vomited since nor has she had any pain. She is able to eat and appears to be relieved of her trouble. I have not been able to satisfactorily explain the disturbed mechanics in this case and for this reason should a similar case present itself I would feel justified to adopt the same surgical measures.

Dr. Albert Goldspohn, Chicago.—I would like to ask Dr. Crile whether he would do anything with a duodenal ulcer besides doing a gastroenterostomy. Would he invert the ulcer by stitches uniting the seromuscular coats externally without opening the lumen of the duodenum? Would he make a temporary occlusion of the pylorus, in such cases, and by what method?

Dr. Thomas B. Noble, Indianapolis.—With regard to benign stenosis at the pylorus, I am surprised that the work of Finney, of Baltimore, has not been mentioned in that connection. In my opinion Finney has given us an operation which meets the indications here most admirably. I will not undertake to describe his operation because I take it you are all acquainted with it. He opens the pylorus widely and gives permanent and free gastric drainage. This operation, of course, necessitates going into the lumen of the pylorus and duodenum. I do not see why men should fear such a procedure. Here in this locality infection is almost nil, and it is my belief that we may enter the lumen of the stomach in this region as we desire, and do almost any sort of plastic operation which will overcome the difficulty. Finney's operation does this, and in conjunction with it we are able to remove the ulcerating area as well. Finney splits the pylorus, the sphincter, and the upper end of the duodenum about midway between the superior and inferior borders, which in my opinion can be better done by making an incision low down, so that when the margins of the lower limbs of the incision are brought together they will not form an obstructing shoulder which does exist in his operation. This shoulder is formed by the union of the posterior margins of the pylorus and duodenum.

I have had eight cases of this character in which I have used his operation, which I feel is a satisfactory method for this sort of stenosis, and certainly to me it is infinitely superior to an

artificial, unnatural fistula established between the stomach and some portion of the intestine where nature never intended it to be.

Dr. Crile's insistance upon careful preparation of the patient is a matter of great importance. In a few instances of marked starvation I have had that impressed upon me, and I lost a case from postoperative acute mania as the result of long-continued starvation which might have been saved had I given more attention to that feature. Since then I have been able to overcome the difficulty by giving antecedent to the operation rectal nutrient enemata. I have had no experience with blood transfusion, but I have often used in this type of cases normal saline solution immediately before and during the time of the operation, which I feel is of very salutary benefit.

I wish to refer to two cases of perforated peptic ulcer in this region, in one of which the contents of the stomach entered the right upper quadrant of the abdomen where it had remained for thirty-six hours. In the other we had the contents of the stomach exuded at this point into the abdominal cavity for four days and nights. Salts, oils, and various things had been given, and these were found floating in the abdominal cavity. Both of these cases made good recoveries and are recited to illustrate the tolerance which the peritoneum has for gastrointestinal contents when coming from a point high up.

Dr. George W. Crile (closing the discussion on his part).—I am much interested in Dr. Keefe's paper. In a patient having congenital obstruction and on whom I had performed a gastroenterostomy, the abdominal wound broke open because of a nurse's mistaking plain catgut for chromic. The child was emaciated and reduced at the time of operation. This added strain would have been fatal but for a blood transfusion. The child is now four years old and healthy.

I usually protect a duodenal ulcer by plicating the pylorus, but as far as possible I excise gastric ulcers—partly because they are not with certainty cured by gastroenterostomy and partly because a cancer may develop at that point. If I knew the ulcer was situated in the cardia before operation, I do not think I would do a gastroenterostomy. I would do no operation until the patient was urged by some great extremity to require it. If I did operate, I should do the Von Eiselberg operation by performing a jejunostomy and allowing the stomach to have absolute rest for a period of four or eight months.

Dr. Keefe (closing the discussion).—Dr. Carstens spoke of having had some difficulty in cutting partially through the stomach wall and endeavoring to avoid the mucous membrane, by only cutting through the muscular wall. It would seem that he has an entirely different proposition to deal with from what we have in these cases where we have a pyloric tumor. If we have a small cartilaginous mass it does not cut like muscle at all; it cuts like connective tissue, so I think we will have no difficulty

in going through the peritoneum and cutting through the cartilaginous mass, because the mucosa looks so different.

Dr. Noble spoke of Finney's operation. I have not been able to find a single case where the Finney operation for the cure of stenosis, that is, congenital pyloric stenosis, was indicated. Here again we have a different situation to contend with. I think the Finney operation, as first advocated by him, is too extensive for these little subjects. They weighed about 6 1/2 pounds, and the small intestine or the duodenum perhaps was not larger than the first joint of the little finger, and the walls are delicate and thin, and Finney's operation to my mind would be out of place in this type of case. Any man who has employed it, and every surgeon who knows about it, realizes that it would be an undesirable operation in these cases. We are in the habit of doing gastrojejunostomy on the adults so frequently that there is a tendency in this type of case to employ it. To my mind the other operation is simple, and it is decidedly better than to have to employ a more extensive operation, and the average mortality from gastrojejunostomy is about 50 per cent., and with men operating for the first time, it seems to me even with divulsion, which seems more crude with forceps, there will be better results than with gastrojejunostomy. While gastroenterostomy is more of a fad to-day, yet it should not be employed in this type of case.

ILEOSIGMOIDOSTOMY FOR COLONIC STASIS.

BY

CHARLES L. BONIFIELD, M. D.,

Cincinnati, Ohio.

Abdominal surgery has reached its present status by a process of evolution and Ephraim McDowell was its father. For many years the operation with which his name is connected was the only intraabdominal operation undertaken by surgeons. Mistakes in diagnosis occasionally led to a fibroid being removed and mistakes in diagnosis finally led to the operative treatment of tubercular peritonitis. But after Lister discovered the cause and method of prevention of surgical infection, pelvic surgery made rapid strides.

Lawson Tait showed the feasibility of removing pus tubes. Baer of Philadelphia perfected the technic of supravaginal hysterectomy, which made operations for fibroids comparatively safe. After gynecologists had demonstrated the way to deal surgically with these intrapelvic conditions, it was perfectly natural that other parts of the peritoneal cavity should be invaded by the surgeon.

Fitz of Boston demonstrated the true nature of appendicitis and suggested its surgical treatment, and it was not long until the troublesome little organ was being extirpated by scores and hundreds of operators. The gall-bladder likewise offered a fertile field for the surgeon. The first operation for gallstones was performed by Dr. Bobbs of Indianapolis in 1867, but it was not until abdominal surgery had become well established that surgical treatment of the gall-bladder was resorted to with any degree of frequency.

Next the surgeon naturally directed his attention to gastric and duodenal ulcers and to perforations of the small intestine from typhoid ulceration. As in the early days of ovariotomy tumors were only operated on when they became a serious menace to life, so in the earlier days of operations on these various organs, the appendix was only removed when it was thought the patient could not otherwise survive. The gall-bladder was only invaded after months and years of suffering had convinced the medical attendant of the futility of further drugging, and the

operation for ulcer of the stomach was only undertaken when a perforation made death inevitable without surgical aid. But experience has taught surgeons to be more radical and the medical men less conservative in treating these conditions. The skilled abdominal surgeon now invariably examines the appendix and gall-bladder when the abdomen is opened for any cause, and if either shows marked evidence of disease and the condition of the patient will permit, he at once deals with them in a surgical way. Ulcer of the stomach and duodenum not yielding to medical treatment and dietary in a reasonable length of time are submitted to the surgeon while they are in condition to be fair surgical risks.

The success of surgeons dealing with these conditions (stomach and bowel) led to the extending of their operations to other conditions which had for ages been considered purely medical in character. The success of the gastroenterostomy in relieving conditions in which the mechanical obstruction was at or near the pylorus, led to its employment in those cases in which the stomach is prolapsed and dilated.

The results obtained from this operation in the latter class I think on the whole have been disappointing. Mr. Lane of England long ago pointed out that in these cases there was also a ptosis of the transverse colon, and more or less of all the intestines, and that the ptosis of the colon leads to the formation of adventitious bands of peritoneum causing kinking of the ileum a few inches from its entrance into cecum and of the colon at its hepatic and splenic flexures. In this way the condition which has been designated as colonic stasis arises.

The primary symptom of this condition is obstinate constipation. Ordinarily the patient will not have a movement of the bowels without the use of purgatives and as time goes on it requires larger and larger doses of drastic drugs to produce the desired effect. The patient is poisoned by the absorption from the clogged sewer which the colon has become. She suffers more or less constantly with ill-defined pains in the abdomen. Her skin becomes muddy in appearance. The action of the heart is irregular. Here eyes lack luster and have a semidazed expression. Digestion is slow and oftentimes painful. Frequently the breasts undergo a cystic degeneration. She becomes a pronounced neurasthenic. She will occasionally improve under the stimulation of new environment or a change in her medical attendant, but the benefit is only of short duration.

No belt has been devised that will hold the displaced organs in position. No drug that will restore tone to the overdistended viscera. Surgery seems to offer the only hope of a permanent cure.

The use of the bismuth ingestion and the *x*-ray have been of the greatest benefit in studying these cases. By this method one can see how long it takes the stomach to empty itself, how long the bismuth takes in passing through the small intestine and the length of time required for its passage through the colon. Moreover, the size and the location of the stomach and transverse colon can be accurately seen.

The use of the *x*-ray, however, must go hand in hand with the careful study of the history of the case and the symptoms manifested to a competent clinician. Just as the pathologist in using his microscope is a great aid in verifying the diagnosis of the clinician, he will seldom risk making a diagnosis from a microscopic picture alone.

In some of the cases in which the *x*-ray shows a marked displacement of both stomach and colon we will find these organs functionating very well, the symptoms certainly not being of sufficient severity to justify any judicious surgeon in advising surgical treatment.

If surgery is demanded two entirely different procedures suggest themselves. The first is to endeavor, by giving the displaced organs some additional support, to keep them in approximately their normal position. This is attempted by fastening the mesocolon and omentum to the abdominal wall by sutures or the stomach and colon themselves, the idea, of course, being the same as in a ventral suspension of a prolapsed or retroverted uterus.

There are some objections to this procedure. In the first place the adhesions formed are not always of sufficient strength to maintain the displaced organs in the required position.

In the second place such attachments have led to complete obstruction of the bowel and in the third place, in some cases the colon is so elongated that to fasten it up would be to simply create a number of small loops instead of one big one, and as each loop will have an angle or kink, the utility of such a procedure is certainly questionable.

The second procedure consists in short circuiting the bowel. A railroad that has been built for a number of years may find that to handle its business satisfactorily, it is necessary to elimi-

nate some of its curves and lessen some of its grades. Just so the intestinal tract of the adult human being may have become so elongated and distorted that the curves and grades are too great for the motive power, and in order that the fecal matter may be evacuated in a reasonable length of time it is necessary for the route to be shortened and the grade made easier.

The operation devised by Mr. Lane consists in cutting the ileum in two at a point a few inches from its lower termination. The short end of the ileum is securely closed and the other end is anastomosed with the sigmoid flexure somewhat below the most prominent part of its curve. When the operation is done the contents of the small bowel are emptied near the lower instead of the upper end of the large bowel. The ascending, transverse and descending colon are thus put entirely out of commission.

Mr. Lane, who has done a large number of these operations, finds that if the ileum is attached below on the sigmoid flexure, there is usually no return flow of fecal matter into the descending colon. In only about 7 per cent. of the cases is there a backflow, and it then becomes necessary to reopen the abdomen and remove the colon.

It is not advised that this be done in any case at the primary operation, because it adds much to the gravity of the same and is usually not necessary. Furthermore, if it has to be done finally, the patient, having been more or less completely relieved for a number of weeks or months, is in a better condition to stand such a radical procedure and the blood-vessels in the mesentery supplying a bowel that has not been functionating for a considerable length of time, are not so troublesome as they are when the bowel has been performing its usual duties.

It has been urged against this procedure that it is unnecessarily severe. That it is too severe for minor cases cannot be denied, but no operation is too severe that will give relief to the worst cases, unless it has a prohibitive mortality, and this is not true of this operation in the hands of anyone experienced in abdominal surgery.

Secondly, it was feared that such patients would not have control over their bowels. This fear has not been realized as far as I know by the experience of any operator. The patient usually has two or three stools, more or less formed, in twenty-four hours. My own experience with this operation is limited to six cases. All of them have been operated on within the last six months.

Case I.—The first patient I saw with my friend and colleague, Dr. Carothers. She was thirty-one and unmarried. Up to the age of twenty her health was comparatively good, with the exception of painful menstruation, for which she was twice cureted without relief. At the age of twenty-eight the abdomen was opened and the left ovary and appendix removed. After this her health was only fair, headaches and ill-defined pains continuing for which she consulted internists, orthopedists, oculists and rhinologists. When I saw her she was absolutely unable to work and manifested in a marked degree all the symptoms of colonic stasis. She was afraid to eat on account of the difficulty experienced in evacuating the bowels.

We opened the abdomen with the intention of fastening the colon to the abdominal wall. When we found how long the colon was, it appeared to both of us that this would be a useless procedure. The colon in this case was very much diminished in caliber, being decidedly smaller than the usual small intestine. The ileum was severed at the usual place between rubber covered clamps. The ends were sponged off and rapidly closed with continuous sutures of chromic catgut which controlled all oozing. The ends were then inverted and a row of fine silk sutures inserted.

The long end of the ileum was then carried over to the sigmoid flexure and a lateral anastomosis was made as near the ends of the ileum as could conveniently be done. A suture or two fastened the mesentery of the ileum to that of the sigmoid flexure so as to render it impossible for a coil of intestine to pass behind the anastomosis.

Mr. Lane does an end to side anastomosis, but I chose the lateral method because it was more easily done and the lateral anastomosis has given a lower mortality in the hands of most operators than either the end to end or end to side.

Before the operation this case had not had a stool without the use of purgatives for over five years. On the third day following the operation the bowels moved of their own accord and continued to do so up to the present time. For the first week the stools were rather too frequent and loose and irritated the skin around the anus. Since that time the condition of the bowel has been quite satisfactory. The patient has gained 15 pounds, has been following her work as a hairdresser and solicitor. Her skin has cleared and her general health improved in every way.

CASE II.—Mrs. S. came to me on account of "stomach trouble." She had constant pain in the abdomen and was absolutely unable to work and I could scarcely get her to take enough food to nourish her, on account of the distress it gave her. Her bowels only moved when given violent purges. After a month's observation and treatment I advised operation and she immediately consented. The operation was performed as in the previous case. Her bowels moved on the third day of their own accord and for a short time were rather too loose.

Within a week she was eating better than she had for years. Once since she went home she has been somewhat constipated, but I think it was due to large quantities of milk she was taking. Her colon like that in the preceding case was of very small caliber.

CASE III.—This patient came to me for laceration of cervix and perineum, but complained of symptoms in the abdomen that could not be accounted for by this condition. I had *x*-ray pictures made by Dr. Sidney Lange, which demonstrated ptosis of the colon and I advised her to let me perform this operation when I repaired the lacerations. The operation was performed as in the preceding cases. The colon was exceedingly long, but more normal in caliber. Her bowels did not move until the fourth or fifth day, and then assisted by a small enema. They are now moving freely and her stomach is behaving very well.

CASE IV.—Miss G., age thirty-three, menstruation began at about the age of fifteen. Was irregular for the first year, later it became regular and was painful. She had suffered from constipation as long as she could remember. She complained of ill-defined pains in the abdomen. She had periods of the most profound melancholia and fits of uncontrollable temper. She had worked at dressmaking but had been compelled to give it up on account of her health. She was treated by a general practitioner of ability, but he diagnosed her case as hysteria and treated her without sympathy and without benefit. She was seen in consultation by one of the most popular neurologists in Cincinnati who confirmed the diagnosis of the general practitioner. His suggestions as to the treatment were without benefit. Her mental condition was getting worse. I saw her in consultation. Physical examination showed the uterus not well developed, with a long, narrow cervix, sharply anteflexed. A fibroid the size of a hickory nut was present in anterior wall of uterus. I advised a thorough dilatation of the cervix, curetage and pack-

ing of the uterus followed by several weeks' rest in bed in a hospital.

The fact that I said there was a physical basis for her symptoms and outlined a definite line of treatment, secured her confidence. She was cureted at the Good Samaritan Hospital, Jan. 15, 1912. She immediately improved and made every effort to get well. Her bowels remained constipated. If they were not permitted to move for several days her symptoms, especially the melancholia, threatened to reappear.

The large doses of purgatives necessary to move the bowels exhausted her. After two weeks in the hospital I saw that I could not improve her condition any further by rest and changed surroundings. She was sent home and ordered to walk several squares every day, eat large quantities of fruit before breakfast, and take a cold sponge bath every morning. Several times a day she was to exercise by bending forward till her fingers touched the floor and then straightening up. Under this regimè she about held her own but made no further progress. It took about ten grains of compound extract of colocyinth with five of cascara to move her bowels.

Dr. Dudley Webb made *x*-ray pictures of stomach and intestines, showing ptosis of colon and slow motility. She returned to the hospital and May 22 I did an ileosigmoidostomy and also removed the small fibroid.

Her bowels moved on the third day without a purge. For a few days they were a little too loose but since that time they are all right. She was in my office within the last ten days. She is the picture of health. Skin clear, eyes bright, a constant smile on her face and she has gained about 20 pounds in weight.

Case V.—Mrs. N., wife of a physician, entered Christ's Hospital, May 22, 1912. She had been troubled with obstinate constipation for twelve years. She was melancholy, and trifles brought on nervous attacks that would compel her to go to bed. The *x*-ray showed ptosis of colon and stomach. She was operated on May 25. She did not do well from the start. There was some elevation of temperature, scanty urine, and the bowels only moved after a purge was given. She died of pneumonia, June 12, eighteen days after the operation.

Case VI.—Mrs. G., aged thirty-five, mother of two children. During entire married life her health had only been fair. Had had headaches and ill-defined pains over body. She consulted me on June 19, and entered the hospital (Good Samaritan) the same

day. She was operated on the following day. Her recovery was uneventful, and she left the hospital for home June 18. I was talking to her husband a few days ago in my office. He tells me she has gained in weight, her bowels are moving regularly, and her general health is much improved.

One death in six cases is a high mortality rate, but judging from the very smooth recovery of the other five, this is not what the rate will be when the series of cases is larger. I believe any other intraabdominal operation would have led to this woman's death, and that it should be attributed to the operator, but not to the operation.

This very interesting subject is still in its infancy, and I offer this paper as a slight contribution to its study, believing that in a comparatively small number of severe cases this operation will bring relief that cannot otherwise be obtained.

409 Broadway.

DISCUSSION ON THE PAPER OF DR. BONIFIELD.

Dr. George Van Amber Brown, detroit.—In connection with the cases described by Dr. Bonifield, I wish to report a case along this line which occurred in my practice. I presume nearly every operation has been done for the correction of epilepsy. Last winter a woman twenty-eight years of age, an epileptic, was referred to me. She was in a very bad condition and was having several convulsions daily which would come on at any time or place so that it was necessary to have some one attending her constantly.

I took her to one of our neurologists, who examined her carefully and said he could do nothing for her. She had been married eight years, had never been pregnant, was a victim of chronic constipation and general digestive trouble. Seven or eight days would elapse between bowel movements. In view of this, I suggested that an ileosigmoidostomy might afford relief, which suggestion was approved by the neurologist. The patient and her husband agreed to, and were anxious to have the operation done immediately. However, I kept her under observation for ten days before operating. I gave her a bismuth meal of six ounces subcarbonate of bismuth, following which an *x*- ray was taken. It was only a few moments before the bismuth left the stomach and ran into the small intestine. I understand this is a common occurrence in neurotic individuals of any type. The bismuth was watched by *x*-ray pictures taken every hour or two from morning until evening. It passed rapidly down to the colon and there it stayed, there being a pronounced coloptosis. The next morning the bismuth was still there; forty-eight hours later it was there. I did a lateral

anastomosis of the sigmoid with the lower end of the ileum, but did not disconnect the one portion of the ileum from the other, taking a portion from a few inches above the cecum and attaching it at this point (indicating), leaving an opening 3 inches in length. After the fifth day she had normal movements of the bowels. During the first week, about the fifth day after the operation, she had one convulsion after which she made an uneventful recovery. She was able to leave the hospital at the end of the third week. I then for a time lost track of the woman. Four months after the operation I received a letter from her husband stating that she was so well that she did not think it necessary to come to see me, that she was not having any more epileptic attacks and that her bowels were moving regularly every day. I simply report this for what it is worth.

Dr. Francis Reder, St. Louis.—I have been very much interested in the case of stasis of the bowel related by Dr. Brown. It requires a great deal of mental tact to keep the alimentary tract in a physiological condition. With the operative measures that have been instituted most of the physiological dynamics have been overthrown. After what has been said, there is nothing surprising in abdominal surgery. I am gratified to know that the doctor obtained such an excellent result from the operation which he performed in this case, relieving the epilepsy. If we go back to the principles of hygiene, we must bear in mind that in some of these cases the bowels, instead of harassing them with cathartics, need proper physiological rest. A good drink of water upon rising, and the necessary exercise is all that is necessary to correct the condition in many instances. However, we must not lose sight of the fact that operative measures are very beneficial in certain instances and are to be recommended.

Dr. Bonifield (closing the discussion).—I want to add one remark that I failed to make on account of lack of time. I reported one death, which I regard as due to the operator, and not to the operation. We all have accidents at some time. Just what occurred in this case I do not know. She did not do well from the start, but judging from the five other cases, the mortality of the operation ought not to be greater than from any other intraabdominal operation. The other five had uneventful recoveries. This particular case was not a good surgical risk. She was an old woman who put up no fight at all. She went bad from the start, and, as I reported, died the eighteenth day from pneumonia. I could not get a postmortem examination. I succeeded in getting her bowels to move. The anastomosis was all right. There were no evidences of peritonitis, and yet I believe there was some sepsis in the case. I would not advise this operation for a minute if I thought it would have a mortality of 16 per cent. But I believe, as I stated, this was an accident, and that one ought to operate on these cases with a mortality of probably about 5 per cent. This is not a prohibitive mortality in these severe cases. I would not for a

moment operate on a case that had not been treated for a long time by the internist or by some one in whom I had confidence, and most of these cases I kept under my own observation. Two of them, if you remember, were kept under observation for a month. The operation is not difficult, and ordinarily the patient is made comfortable a day or two afterward, and I believe the operation has a future.

A CASE OF UTERUS SEPTUS WITH HYPEREMESIS GRAVIDARUM, INTERRUPTION OF PREGNANCY AT THREE AND ONE-HALF MONTHS, FOLLOWED BY PERITONITIS. RECOVERY.

BY

H. WELLINGTON YATES, M. D. AND PLINN F. MORSE, M. D.,

Detroit, Michigan.

(With Nine Illustrations.)

CASES of anomalies of the uterus are being so commonly reported and the mechanism of their formation is so well understood that the main interest which now attaches to them is a clinical one.

It will be remembered that the tubes, uterus, and vagina are developed from the Müllerian ducts and that these two ducts become fused, except the uppermost parts, which go to form the Fallopian tubes. The varieties of malformation encountered are, therefore, very numerous and depend upon the extent to which development and fusion of the two parts, which should become blended, fail (44).

The complications and accidents of pregnancy to which women with double uterus are especially liable, deserve careful study and accurate observation. Since the first reports of the malformation by Kussmaul (24), who found it in stillborn infants, many careful observations have been made relating to the etiology. Bell (5), in a report of a case of double uterus with ectopia of each in an inguinal hernia, shows that failure of the Müllerian ducts to fuse depends largely on a deficient formation of the utero-sacral musculature and also the decussating subperitoneal muscle fibers which normally form the external coat of the uterus. Contributing causes are a short genital mesentery and hypertrophied round ligaments which, if short, tend to drag the ducts apart.

The clinical observations, which are very numerous, tend to make the cases fall into several classes according to the age of the patient, the kind and extent of the malformation, and the complicating conditions.

From a perusal of the literature, it is evident that cases of double uterus with both uteri equally developed and normal, are

rather rare. Usually there is at least one side which shows marked atresia and gives rise to abnormal symptoms and signs under certain conditions to be discussed later. Cramer(3) reports a case of complete double uterus in which pregnancy took place simultaneously in each side, labor came on independently in each uterus and was completed without mishap except severe postpartum hemorrhage. Such cases are, however, rarely seen,

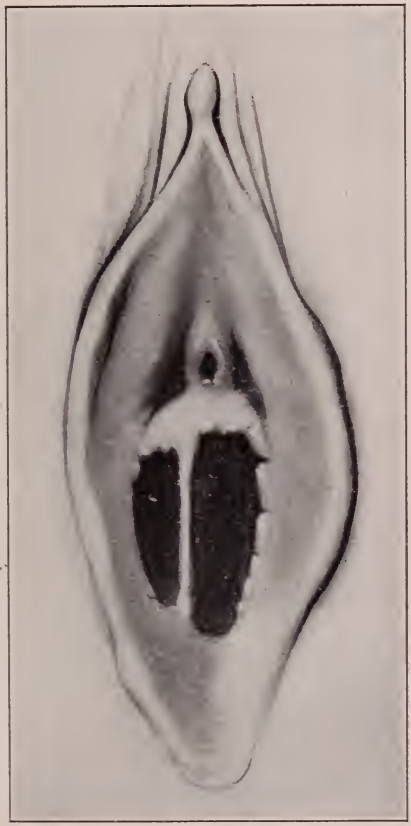

FIG. 1.

although it has been suggested that many cases of double uterus go through a normal childbearing life without ever being detected. Usually the cases fall into the following groups:

A. Those Consulting the Physician at Puberty for Abnormal Menstrual Phenomona.—These cases, of which twenty-three had been collected by Durlacher(14) up to 1909, come to the physician

complaining of pain and swelling at the menstrual period and with or without menstrual blood showing, dependent upon whether both sides or one is atresic. Examination shows hematometra on the defective side. Sometimes this breaks through spontaneously.

B. Those Showing Purulent Processes in the Atresic Half of the Uterus.—These cases are much rarer. Breisky (28), Sicherer (29) Peham(30), Gusserow(31), have reported such cases. Just

Fig. 2.

why, in the absence of instrumentation or evident inflammatory pelvic disease, these atresic uteri should become so easily infected is not clear. Gusserow's case was pregnant on the fully developed side. The occurence of pyometra and pyocolpos in cases of double uteri is very important and interesting. They show the value of routine careful pelvic examination in cases with fever and other septic manifestations. The blood count is high, and there are definite symptoms of infection without the true condition being discovered until peritonitis has closed the scene and autopsy revealed the pathogenesis.

C. Cases with Pregnancy Occurring on one or Both Sides.—When the pregnancy occurs in the atresic half, some mishap is almost sure to supervene and the physician should have diagnosed the condition of double uterus early and kept the patient under constant supervision. These cases of double uterus complicated by pregnancy form by far the largest and most important group. The pregnancy may not be suspected by the patient for some months owing to a normal menstrual flow from the other side,

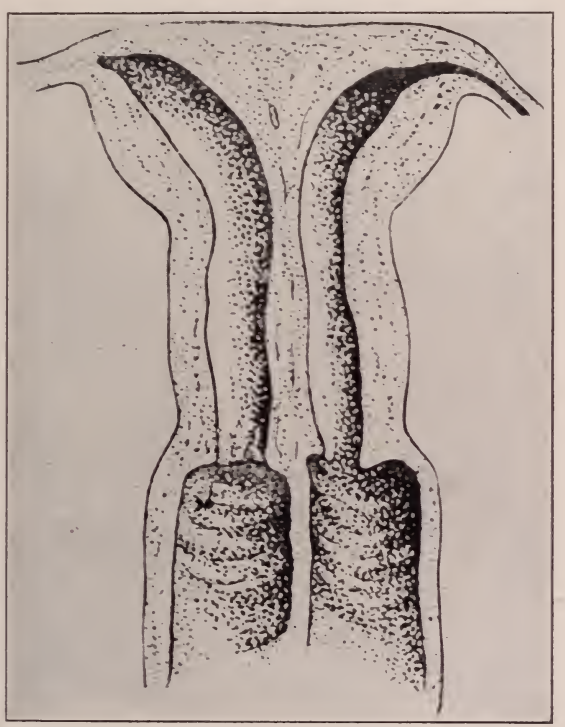

FIG. 3.

as in the case reported by Cunningham(22). Severe recurrent hemorrhages, especially occurring at the normal menstrual time, cause the cases to be confused with ectopic pregnancy or placenta previa. Masterman(11) delivered a woman after bringing on labor artificially at the seventhmonth, because of very severe hemorrhage recurring at the fifth, sixth and seventh months. There was also severe postpartum hemorrhage. This patient subsequently became pregnant in both uteri and aborted at the

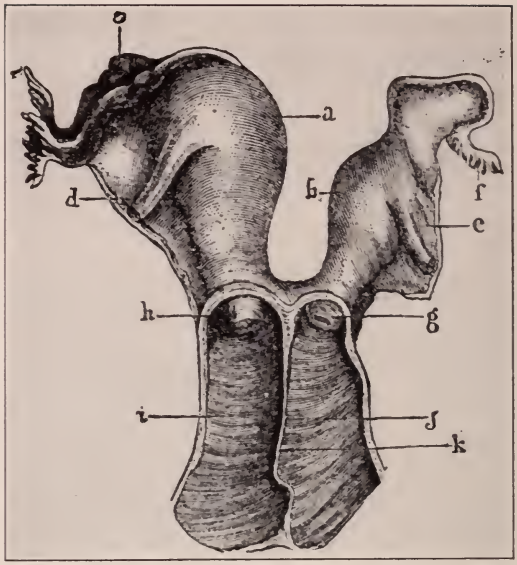

FIG. 4.

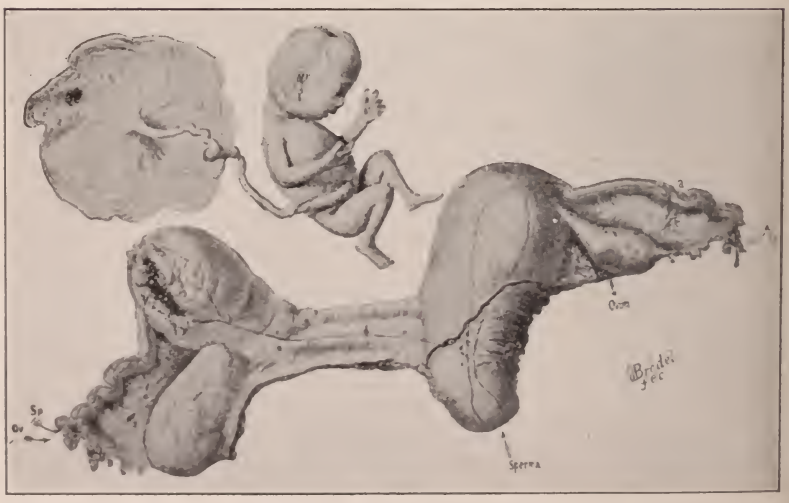

FIG. 5.

fourth month. The danger of infection in these cases seems to be very great and extreme care should be exercised in any operative procedure upon them.

The necessity for early recognition of pregnancy in all anomalies of the genital tract is obvious and to this end we should persistently endeavor to educate the laity to seek counsel of their physician as soon as conception is suspected.

In a certain class of anomalies where the divergence from the normal is not marked, gestation may continue to term and a

Fig. 6.

fairly normal labor result in a living child, but in that class of cases which is met with not uncommonly, namely, those which become pregnant in a rudimentary horn, seldom, if ever, can go to term, since the muscular development is as immature as the parts are morphologically incorrect. As Williams(45) says, "unless there is free communication between the two horns, which is but rarely the case, a pregnancy in this situation is a very serious occurrence, since normal delivery is impossible. If the muscular tissue of the rudimentary horn is poorly developed,

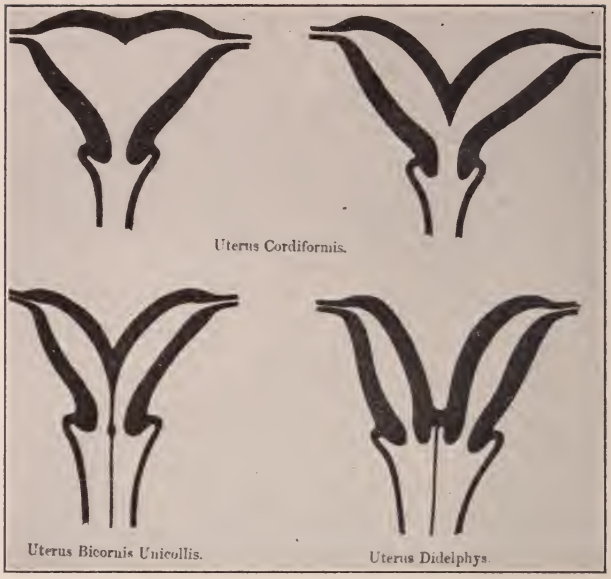
Uterus Cordiformis.
Uterus Bicornis Unicollis.
Uterus Didelphys.

FIG. 7.

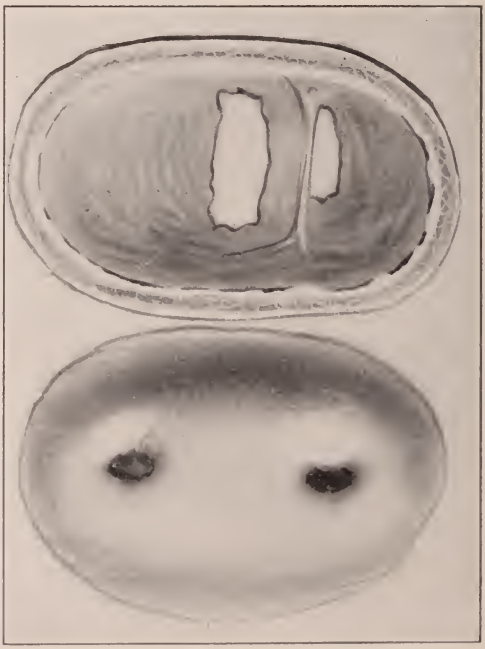

FIG. 8.

as is usually the case, spontaneous rupture occurs within the first four months and may lead to the death of the patient from intraperitoneal hemorrhage."

Recognition of this kind of anomaly during pregnancy is scarcely ever possible unless the patient is seen early. Diagnosis of pregnancy is made difficult in all forms of double uteri, complete or otherwise, because of the accompanying hypertrophy of that portion not involved.

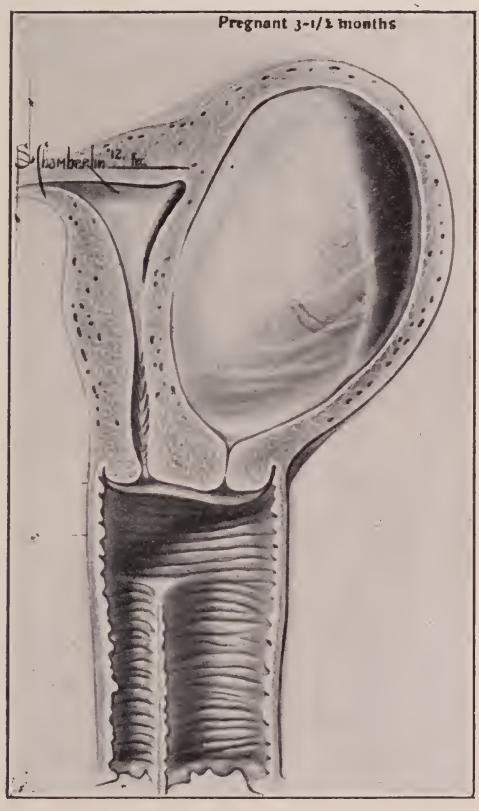

Fig. 9.

On Feb. 6, 1912, I was called by Dr. J. H. Sanderson of Detroit, to see Mrs. S. D., and elicited the following history She had been pregnant for three and one-half months. Very early in her pregnancy she showed persistent nausea which progressed to a true hyperemesis gravidarum in spite of all treatment that could be instituted. She had lost much weight,

was confined to her bed and unable to retain the least nourishment. Her condition was so grave that Dr. Sanderson felt it incumbent upon him to empty the uterus, which he did on the day preceding my call. On the evening of that same day she showed signs of serious illness. Her pulse became weak and temperature elevated, she had abdominal pain and a moderate tympany. I was called so see her along with Dr. A. N. Collins, on the afternoon of the following day. The patient showed all the classical symptoms of a diffuse peritonitis. She looked desperately ill, her pulse was 150 per minute, small and easily compressible, her temperature 102° F., and she vomited brown fluid in a projectile manner. Her abdomen was generally sensitive to touch and markedly distended. Her mental attitude was one of great anxiety. She had a leucocyte count of 21,000, with a differential of 85 per cent. The following morning (forty-eight hours after the uterine evacuation) with a condition worse rather than better, with the leucocytes having gone to 30,000 and the differential count to nearly 90 per cent. of polymorphonuclears, I advised an examination under an anesthetic with a probable posterior colpotomy. Under ether and by aid of good light and position, it was seen that there was a partial double vagina, on the left side fully matured, but on the right rather small and separated from the left by a septum running antero-posteriorly for about 2 1/2 inches upward, ending above this point in a common vagina. The cervix was rather large and oval with a distinct septum dividing its vaginal view, with an os on each side. A blunt instrument introduced into each canal simultaneously with the endeavor to make their upper ends touch, failed to do so and thus we concluded that the uterine septum was complete.

The accompanying illustrations taken from standard texts along with the original ones of my own case are offered in brief review.[1]

The left uterus was free from débris. Since we ascertained that it had not been punctured by former manipulations, we believed it probable that the right side was pyometric and from this source came the infection. As we said in the early part of this paper, it would be intensely interesting to know the causes

[1] Attention should be especially called to the fact that within twelve hours of the interruption of the pregnancy, peritonitis was fully developed, making it probable that the infection antedated the instrumental interference. The liability to cryptogenic infection in the atresic half of these uteri was pointed out in referring to the literature.

of these cases of pyometria associated with pregnancy in the anomalous uterus. After the examination was completed, a colpotomy was done and a large self-retaining drainage tube inserted. One liter or more of dark brown, fetid, thick fluid escaped. The patient was kept in the extreme Fowler's position for a few days. She made a rapid and uneventful convalescence. The drainage was removed in two weeks.

Besides the interest surrounding the malformation in this case we are inclined to urge early colpotomy in all cases where extensive and frank peritonitis is present. Done cleanly it can do no harm and done early it will save many lives. It is quite probable that this patient under more normal gestational conditions might have borne a living child at term without great injury to herself, and it is much more certain that she would have died without the vaginal section being done. We have since censured ourselves for not doing it at our first call.

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WHY INCIDENTAL REMOVAL OF VERMIFORM APPENDIX, WHEN REASONABLY POSSIBLE, SHOULD BE THE RULE.

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THIS procedure has been practised more or less by a large number of surgeons for a number of years—chiefly by those who do the most work. Still there remain many others who object to it on sentimental and theoretical grounds, that, in some instances appear as rather shabby excuses.

It is time that such men be made to feel that this quibbling will not be accepted in lieu of what is accepted as a matter of duty by those who do probably the most and the best abdominal surgery. For this reason there should be a more general expression on the subject.

Prophylaxis is becoming more and more the better part of the function of every medical man. All researches aim in that direction by leading to a better understanding of physiological facts and processes and by finding out the causes of disease, for the general public good. The medical profession is the one which, above all other learned callings, is zealously engaged in altruistic labors which gradually diminish the sources of its revenue and the reasons for its existence. It is a noble thing to rescue life and health from their battles with disease, injuries and infirmities; but it is a nobler thing to guard them from such attacks.

As far as is now known or likely to be known, *the vermiform appendix is a vestigeal structure, not to be regarded as an organ or in any sense essential to the body.* This is evident from its embryological history and is abundantly proven by thousands of observers in thousands of cases. Who, of all these witnesses, ever saw any harm from the loss, *per se*, of this little reptile, so common in the genus homo, no matter how abundant be his theories in its defence. Embryologists, notably Prof. F. P. Mall and Mr. Max Broedel, who carefully examined fifty-four human embryos and presented enlarged illustrations of many of them, state, that

between the fourth and fifth intrauterine week the cecum first appears as a bud upon the caudal limb of the original loop of intestine within the umbilical cord. At the eighth week it has become differentiated in size from the small intestine, which has grown rapidly in length. At this time the primitive cecum begins to reject its terminal portion by a restriction in the growth which continues until the variable vestige remains which we call the appendix. A structure thus discarded in nutrition and function lacks that vitality, hardihood and capacity to ward off disease, which other organs have that render an essential service. An organ that does this, as Horsely says, will not be found to vary so extremely in size, shape, consistency, position and blood supply. Exhaustive histological and other studies of the appendix have been made by Ribbert,(2) Zuckerkandel,(3) Suduski,(4) Riedel,(5) Meisel,(6) Lanz,(7) Brunn,(8) L. Aschoff, (9) Faber,(10) MacCarty,(11) and Nowicki(12).

Those of us who have not the time or opportunity to make such commendable studies of this subject should at least acquaint ourselves thoroughly with these researches already made in it, for they bring daylight to the whole subject. When we have done this, we are made to realize that almost daily, appendices have passed through our hands that we have regarded as "normal" or "innocent" or "atrophic," etc., when 50 per cent. of them would be found to contain or harbor dangerous beginnings of disease (Aschoff,(13) Pankow), and at least half of the remainder would show interesting evidences of chronic processes if we were to examine them properly macroscopically and microscopically. Aschoff says only half of all adults attain the age of forty years and retain a normal appendix. MacCarty says "there are very few entirely normal appendices." Hermes found the appendix diseased fifty-three times in seventy-five gynecological operations; and Kroenig found it so twenty-one times in twenty-eight such operations in which it was incidentally removed. Goedecke(14) observed sixteen women during pregnancy, who had each had repeated attacks of appendicitis previously. Only five of them escaped, while eleven had appendicitis during their pregnancy. The dangers of this complication are such, that no woman who has had repeated attacks of real or apparent appendicitis should be permitted to become pregnant until such an appendix has been removed. To prevent conception in these cases is certainly our duty, as it is ever our duty to induce abortion in those cases who are tubercular.

The appendix is the locus minoris resistentiæ of the entire intestinal tract, if not of the entire alimentary canal. Stoeber and Dahl,(15) Kretz, Sahli, Aschoff, Corner, and Nowicki call attention to the disproportionate amount of lymphoid tissue and nodes chiefly in the submucosa of the appendix, at the expense of the muscularis mucosæ, so that the epithelium comes in contact with the lymph tissue beneath and provides a direct route for infection from the lumen of the tube to its submucosa where the primary foci of infection may be very marked, before any change is noticeable in either the mucosa or serosa. For this reason most of the authors named have likened the appendix to the tonsil; and the Frenchmen Letulle, Pilliet, and Corte have similarly emphasized the lymph nodes in the submucosa as the initial points of infection. Some desperate theorists point to this abundance of lymphatic elements in the appendix as a safeguard, to take care of the overflow of dangerous elements from the cecum. To make such an idea rational, this tissue should be placed, along with much more of it, in the submucosa of the cecum itself, and not be tucked away in a structure whose trophic conditions are subnormal and whose lumen connects by means of a dangerously small opening with the intestinal tract at a point where the bacterial flora of the latter are most abundant and dangerous. Such a combination may be viewed as a bomb rather than to be credited with any physiological merits. That this picture is not overdrawn, is evident from the sudden, severe and disastrous course so often observed in cases of acute appendicitis, leading in a day or two to gangrene or to perforation and extended peritonitis no less serious than those which obtain in cases of strangulated hernia. To be thus overtaken by either of these freaks of human infirmity spells disaster. Why then await the eruption of such disaster in the one case more than in the other?

To prove the liability of the appendix to infection by way of the blood current, Stoeber and Dahl injected cultures of pneumococcus into the neck of a considerable number of guinea-pigs, near the tonsils, repeating the injections from eight to fourteen times on as many successive days, and then killed the animals when they did not die from the infection. At postmortem, the tonsils and lymph glands of the neck were always greatly enlarged. The general intestinal canal, however, showed some engorgement of its lymph structures in two of the animals only; but the appendix showed marked hemorrhagic engorgement of the lymph structures beneath its mucosa in every animal and

necrotic portions in some of them, thus proving not only the manner of infection, but also that the appendix is the one point of least resistance in the intestinal tract.

During the past ten years the appendix has been removed incidentally with constantly increasing frequency; and greater interest in its capacity for evil has led to more frequent microscopic examination of it. This has shown that carcinoma occurs in about one-half of 1 per cent. of all such appendices and is discoverable only with the microscope in most of them. A large number of observers mention isolated cases. McWilliams(16) collected 105 cases, and MacCarty and McGrath(17) recently reported twenty-two as found in 5000 appendices examined. They say they occur in very small nodules of a lemon yellow color, chiefly in the submucosa and mucosa and that in seventeen of their cases, nothing could be seen or felt except a very small yellow spot in the serosa of one of them which must be carefully distinguished from fat similarly located in inflamed appendices. Some pathologists have hesitated to ascribe serious malignancy to these growths, because certain features of this are lacking, and because metastases have usually not been observed. But what Kelly has correctly stated appears to be accepted, namely, that these growths lead to early perforation or an attack of appendicitis which causes their extirpation before metastases can develop. Cases of diverticuli, papilloma and sarcoma are reported, but are rare occurrences. One surgeon, finding sarcoma in an appendix after operation, reopened his patient on the fifth day and resected the cecum.

But aside from the striking, oftentimes disastrous phenomena incident to acute appendicitis, about which physicians and the public are already informed, there is a wide domain including functional disorders of the organs of digestion and assimilation, in which the "chronic appendix" plies a stealthy and baneful influence.

Extensive clinical experience and careful miscrocopical examination of large numbers of appendices prove that this most vulnerable member very frequently seriously disturbs the functions of the stomach, duodenum and the gall-bladder; and experiments on animals show that it can be the primary cause of ulcers in the former.

Chronic appendicitis so often masquerades as disease of the gall-bladder or as ulcer of the stomach, that many of the best surgeons, until recent years, were misled thereby to do operations on the gall-bladder which did the patients no good unless

the appendix was removed at the same time, likewise to do gastroenterostomies from which the patients derived more harm than good unless the appendix was also removed. Many of these stomach operations were later undone and the surgeons quickly learned that it was the appendix and not the stomach which required operation (Graham and Guthrie[18]). Since then most surgeons of mature experience have repeatedly wiped out cases of persistent stomach disorder, that had often been treated as ulcer, with one stroke of their scalpel upon the appendix. The writer could cite most convincing cases of this kind, as could probably every fellow at this meeting, if time permitted. B. G. A. Moynehan has emphasized "appendiceal dyspepsia."(19) He says it resembles the symptoms of ulcer of the stomach but not with such precise regularity of relief after food, and recurrence of pain later and is more frequently aggravated by exertion and more accompanied by vomiting. Moynehan states that he has seen blood vomited in considerable amounts in such cases, that simply show a contracting pyloric spasm when opened up and not yet manipulated, but no anatomical signs of ulcer. He removed the appendix in twelve out of fourteen cases of operation for duodenal ulcer,(20) and found it to be diseased in every case. The other two patients were in too poor a condition for the additional operating. He says: "We examine and remove the appendix, approximately in nine out of ten of all cases. In 80 per cent. of those removed there are evidences of long-standing and advanced disease." Again, "I have long held the view that diseases of the stomach, duodenum and gall-bladder, with which the surgeon deals are not primary but secondary. They are the result, in my opinion, of an infection or a toxemia which has its origin, for the most part, in some abdominal organ." He thinks that ulcer of the jejunum following gastroenterostomy, may be due to the persistent evil influence of a diseased appendix, when this has not been removed at the prior operation. Graham and Guthrie agree with Moynehan in the differential diagnosis of this form of dyspepsia from ulcer, except as to the vomiting of blood, which I have not found to be confirmed anywhere. They dignify the appendix as equal in rank with the gall-bladder and the stomach, in producing this triumvirate of causes of upper abdominal symptoms, of which they present a good differentiation.

Mahnert(21) observed twenty-three plain cases of diseased appendix in thirty-six plain cases of stomach ulcer, and remarks, "the frequency with which we find ulcus ventriculi and appendi-

citis associated is astounding." He says the chronic appendix should be removed as well as the acutely inflamed one, that the former is less dangerous to remove than are the conditions it leads to when left to expectancy.

Paterson(22) says 66 per cent. of his cases of stomach and duodenal ulcer were found to have diseased appendices when examined after incidental removal. He coined the name "appendiceal gastralgia" and says this is removed in 90 per cent. of the cases by removal of the appendix. He cites three cases of very pronouncedly diseased appendices that were really dangerous, and still had caused no local symptoms at all.

Barclay(23) had forty-one cases of "chronic indigestion" referred to him which he says were cured by removal of the appendix, although ten of them never presented any local symptoms.

Corner(24) under the caption "unconscious, undiagnosable and unrecognizable appendicitis," cites three cases in which a number of good physicians and surgeons discovered no local symptoms or signs at all, when grossly bad appendices were present—containing stones, club-shaped severe constrictions and adhesions, etc. He says: "When the appendix can be removed safely and cleanly without overendangering the patient at an abdominal operation, it should be done." "The appendix is not removed too often."

In the experience of E. M. D. Stanton,(24) the upper abdominal symptoms of a diseased appendix are such an essential part or accompaniment of it, that pain, tenderness, etc., occurring in the right lower quadrant without the referred or reflex symptoms, is not due to the appendix, as its removal only results in failure, but is due to an enlarged or displaced cecum, Lane kink or other form of enteroptosis. On the anatomical side of this question the following are most noteworthy aside from the extended researches referred to in the beginning: MacCarty(25) carefully examined the appendices that were removed in connection with fifty-nine gall-bladder operations, and found 69 per cent. of them diseased. He remarks that similar changes are found in people who have never had appendiceal symptoms and likewise, that in a former series of appendices examined postmortem of persons dying of sundry infections, he found chronic inflammatory changes, chiefly connective tissue hyperplasia and its distorting effects on the different layers of the appendix, in nearly all specimens examined; that for a normal appendix one must look

to a young child or the new-born. Again, according to the investigators Lanz, Brunn, L. Aschoff, Faber, Nowicki, MacCarty and McGrath, obliteration, partial or complete, of the lumen of the appendix is the result of previous inflammatory action; *i.e.*, a token of preceding disease. MacCarty and McGrath found this token in 17 per cent. of 2549 cases of general autopsy; in 17 per cent. of seventeen appendices removed during operations for pylorospasm; in 23.5 per cent. of 1005 removed for appendicitis; in 26.9 per cent. of those removed during fifty-two operations for gastric and duodenal ulcers; in 52 per cent. of fifty-seven specimens removed during as many operations for cholecystitis; and in 44.8 per cent. of those removed during 118 operations for cholelithiasis. They also examined the appendices removed during other upper abdominal operations aside from those named, also those removed during lower abdominal and pelvic operations, and noted the clinical features in 2000 of these cases. They conclude that all patients with such an appendix had more epigastric symptoms than those whose appendix retained its lumen.

As to the question, how the appendix transmits its evil influence to other abdominal organs, the assumption of infection has received some support, at least as to ulcers of the stomach and duodenum, by a series of thirty animal experiments performed by Prof. Payr(26) upon a few dogs and cats but mostly upon guinea-pigs and rabbits. In searching for the cause of these ulcers, Payr produced thrombi in veins of the omentum or of the mesentery of the large or small intestine, in gastroepiploic veins and in veins from the appendix. The thrombi were produced by injecting into the veins an emulsion of dermatol, Chinese toilet powder, olive oil, vaseline, or paraffine and olive oil combined. One or several pigments were sometimes added. In other instances the thrombi were produced by heating or freezing the parts. Many of the animals died inside of two days. The others were killed in from three to five days and carefully examined. Aside from the necessary changes in the liver, the stomach mucous membrane showed hemorrhagic spots or areas with or without ulceration, visible at least by a lens, in every animal excepting several rabbits. The emboli were likewise traced, in a number of instances, within adjacent venous radicals. This subject of retrograde embolism had previously received notable contributions by Recklinghausen,(27) Heller,(28) Arnold,(29) and Lubasch.(30) Payr says that this backward floating of

emboli in the veins occurs in conditions of engorgement particularly during sudden interchanges between positive and negative internal pressure, such as occurs in the abdomen in the act of vomiting and in the thorax during coughing.

But the theory of infection, etc., will not account for the referred or reflex functional epigastric symptoms which occur in persons whose appendix is a solid cord with the lumen obliterated. No infection can arise from those; but the sympathetic plexuses of Amerbach and Meisner are still there, and are sending out distress messages from the effects of cicatricial contraction upon them, which messages are undoubtedly forwarded to the solar plexus by the sympathetic, in a similar manner as many a gynecological message is passed up.

The appendix is too treacherous to be trusted when it appears normal. The fact that the microscope finds dangerous conditions in apparently normal appendices, proves that it is difficult, often impossible, macroscopically to say whether a given appendix is normal or dangerous, as is affirmed by a number of writers.

Two nurses were operated by the writer for impending invalidism due to simple but extreme retroversion. There was no history of appendiceal attacks nor any present signs of such disease. The one was treated by my formerly preferred bi-inguinal route; but could as well have been given a median section, as was resorted to in the other case, in which the appendix was studied most carefully by sight and touch, and dropped for purely sentimental reasons as healthy. I had to do an emergency operation for acute violent appendicitis in each case, respectively eight and eighteen months afterward. The women then became well and strong. But the second much more dangerous operation should, and could as well as not, have been avoided at the time of first operation. This should be no indifferent matter to any surgeon. On the other hand, an appendix that has given rise to most serious trouble, may become very innocent in appearance again. A farmer had appendicitis and was treated for it medically. A large lumbar abscess formed that was incised by the doctor; but it would not stop discharging. He came to me with such a fistula leading toward the right kidney. I opened up the whole region and found a fecal stone (examined by a pathologist) near the right kidney. I at once looked for the appendix and was surprised to find it perfectly healthy in appearance, aside from a few adhesions.

L. C. Fischer had to do appendicectomy after other abdominal

operations in two cases, and on inquiry of a number of operators, found that E. C. Davis, Geo. H. Noble, Joseph Price, H. A. Kelly and J. B. Murphy had a similar experience. Howard A. Kelly also found six such cases in the literature and most wholesomely advises that the normal appendix had better be removed when it can be reached in the area of operation, because it is liable to become adherent and dangerously constricted. Fowler(32) had two such cases of appendicitis after operations for pyosalpinx and says: "Ever since the occurrence of these two cases, I have made it a rule to perform typical excision of the appendix, when the latter is intraperitoneally situated, in every case in which the abdomen is opened for any operative structures within reach of this mischievous and useless organ." Weiswange(33) did a laparotomy for pyosalpinx, and found the appendix normal, but could as well have removed it. After a few days, temperature and local signs of infection appeared. An exudate was drained into the vagina, but a discharge persisted from the lower end of the abdominal incision, in spite of several exploratory efforts from various directions. Finally another laparotomy was needed, and the end of the appendix was found adherent at the margin of the first incision and causing the trouble. Weiswange holds that the appendix should be removed in all gynecologic laparotomies, if possible. He says we cannot tell macroscopically whether the appendix is normal, and we are often deceived. Kroenig and Pankow also take this stand, he says, although it may mean removal of 40 per cent. of healthy appendices. Savarioud(24) of Paris says: "My conclusions after due study of appendicitis are, that it is much better to prevent an attack than to attempt a cure. Awaiting the day when it shall be the proper thing to remove the appendix from everyone, so as to do away with the disease altogether, I would advocate at present that when the appendix yields the slightest suspicion of being affected, its removal should be enforced."

To those who are sure to be able to diagnose a healthy appendix, the following, cited by Nowicki, is a good lesson: A man of thirty-eight years, suspected of having his first attack of appendicitis, was operated for this at the Lemburg Hospital, but the appendix was found "normal," and the abdomen was closed. The patient continued in a septic course and died. Autopsy showed a small retrocecal abscess that communicated by fistulæ with both the appendix and the cecum. Further as to prophylactic removal: Maurice H. Richardson(35) says, "I am beginning to see

the value of normal appendectomies performed in the course of other abdominal operations; for in several cases other causes for peritonitis have been recognized in the absence of the appendiceal cause." And, "I have been obliged to operate for acute appendicitis in several patients, because I had not removed the appendix when I could have removed it early and safely during operations for other lesions." I even favor its removal when apparently normal, if it is easily accessible during other abdominal operations, for I believe that it is a threat to every life, no matter how innocent it looks."

Furthermore, McWilliams(35) in a very good report of all appendectomies performed in the Presbyterian Hospital of New York, during 1906, 1907, 1908 and 1909, amounting to 1411 in all, says that 212 of them were done incidentally during laparotomies for other reasons and a few of them in conjunction with other than abdominal operations. He says, "I have seen no list of such operations to prove that the removal of the appendix will prejudice recovery."

Contraindications.—Of course there is a limit to this prophylaxis. Some patients are taxed to the utmost by the severity of the main operation or because they are in bad condition. Often the field of operation is a badly soiled or infectious one and the appendix lies separate from it in surroundings that should not be invaded from such a field unless the appendix has given evidence of present disease. Furthermore, abdominal sections for carcinoma or sarcoma or tubercular disease are too grave in themselves, and the dangers of recurrence overshadow those from the appendix. Again in people who are fifty years in age, appendicitis occurs in a rapidly decreasing ratio, while their heart and kidneys present rapidly increasing defects. They do not well bear any addition to their surgical risks.

In my own work, in the last 700 abdominal sections not for appendicitis or the appendix, and excluding all cases in whom the appendix had been previously removed, I have removed the appendix 354 times incidentally or in 50.6 per cent. In a few instances deaths occurred, but I am satisfied that this little closing act in the operation had nothing to do with them. Two hundred and thirty-seven of this number were macroscopically diseased or abnormal. They were in the order of frequency: (*a*) club shaped with constrictions at the base or near the middle and filled with fecal matter beyond; (*b*) excessive length, 8 to 15 cm. (Nowicki says average length in middle life is 7.4 cm.) and

often accompanied by adhesions; (*c*) entirely buried in adhesions with constrictions that sometimes cut it into links; (*d*) fecal stones; (*e*) bristles, bird shot; (*f*) worms, twice; (*g*) in one instance a tumor, the size of hazelnut, completely buried in adhesions was at end of a 5-inch appendix.

Appendicostomy.—At first thought, this little tube would seem to be very convenient for making an aperture into the cecum. But there are anatomical hindrances to it: (1) Its origin is an inch or more farther away from the abdominal wall than the nearest part of the cecum. (2) Its most frequent course, as studied by a number of men on large numbers of bodies, is transversely inward and downward, rather away from the abdominal wall. (3) It is held in its position by a more or less firm mesentery which carries its blood-vessels and often makes it difficult to reverse its course by cutting and stretching this mesentery without unduly injuring its vessels. The appendix, therefore, easily becomes gangrenous and a cecostomy is the result if the cecal wall has fortunately become sufficiently united to the parietal wall, and when it has not, a serious condition results, as shown by published cases.

C. A. L. Reed(36) says: "In conclusion, I wish to urge that cecostomy rather than appendicostomy should always be adopted as the operation of choice." He cites practically the same reasons. A cecostomy after the manner of a Kocher or a Kader gastrostomy is undoubtedly safer and more adequate in function.

In conclusion: the writer believes that the declarations and charges herein made against the vermiform appendix are sustained by the anatomical and clinical evidence submitted and by the precept and practice of many of the best surgeons; but he respectfully requests this honorable body of authoritative judges to make an expression on this subject with a view to establishing a rule of action in this matter that no one may easily evade.

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THE CHRONICITY OF APPENDICITIS.

BY

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EVERY surgeon who has had much experience in abdominal surgery must have been impressed with the frequency or the almost constant presence of pathological changes in and about the appendix apparently without the slightest history of such involvements.

This is true of the operations performed for the so-called first attack of appendicitis and is especially true in the routine examination or removal of the appendix in conjunction with other abdominal operations.

In a review of 100 operations for appendicitis published by myself in 1909(1) there were thirty-one operations for supposedly first attack of appendicitis. In 50 per cent. of these there was unmistakable clinical evidence of previous inflammation of the appendix.

In the last 100 abdominal operations in which the appendix was removed as a routine procedure, pathological changes were found in 54 per cent. of the cases.

The general subject of appendicitis is well understood and while our literature abounds in contributions upon this subject, there are some facts relative to the etiology of the disease which still need clearing up. Sufficient emphasis has not been directed toward the chronicity of the disease as viewed from a pathological standpoint.

Our present conception of the etiology and pathology of acute appendicitis may be briefly summarized as follows:

The acute attack is often founded on the basis of a preexisting inflammation of the appendix, this inflammation, as a rule, having been so mild as to escape the notice of the patient. The acute inflammation itself is dependant upon bacterial invasion. Many varieties of bacteria have been found, the most common being the bacillus coli, streptococcus, staphylococcus and pneumococcus while later investigations have shown the presence of certain anaerobic bacteria in combination with the above mentioned. The infection takes place by way of the intestine (enterogenic origin) into the cavity of the appendix, whose long

narrow lumen offers poor facility for drainage and is easily obstructed. Obstruction or stenosis of the lumen may be due to a variety of conditions arising either from within or without the appendix. The most common causes are fecal concretions, slow infection of the interstitial portions of the appendix together with narrowing of its lumen by bacteria of low virulency, stenosis or partial closure from adhesions, a contracted mesoappendix or an appendix adherent to the surrounding viscera. Stenosis of the lumen either partial or complete leads to the retention of secretions within the appendix, the bacteria which are normally present become active and diffuse inflammation, gangrene or perforation results, which is manifested clinically in what is known as an acute attack of appendicitis. It is thus apparent that from a strictly pathological standpoint, the so-called acute appendicitis is but an acute exacerbation of a chronic process.

Wilms(6) has emphasized the fact that in the appendix itself there are no sensory nerves, but like the intestines such sensory nerves are found in the mesenterolium therefore inflammatory conditions may exist in the appendix without pain. Pain in appendicitis is present only when a lymphangitis of the mesenterolium exists or peritoneal irritation occurs.

For a proper consideration of the etiology of appendicitis we must distinguish between the changes in the appendix which predispose an acute attack and the changes incident to the acute attack itself.

Some recent additions to our knowledge of the physiology and pathology of the colon, seem to explain to a large extent the cause and frequency of chronic appendicitis as well as the changes in and about the appendix which lead to an acute attack. I refer to the antiperistalsis of the ascending colon as described by Cannon; to the cecum mobile of Wilms, the kink of the terminal ileum (Lane) and pericolitis dextra or Jackson's membrane.

Canon(2) in 1902 reported and described a characteristic antiperistalitic movement in the proximal colon of the cat, a movement of waves backward toward the cecum. These waves are described as being rarely continuous over a long period of time, but consist in a series of waves at the rate of about five per minute and are of four or five minutes' duration.

These antiperistaltic waves have been confirmed by other observers and Jakob(5) has described in addition thereto certain circular muscular bands about the hepatic flexure of the

colon. That such antiperistaltic waves occur in man is based mainly upon inferential evidence drawn from cases of cecal fistula.

In such cases Cannon relates that rectal enemas have been observed to traverse the entire length of the colon and to escape through the artificial opening. Even after transplanting the ileum into the transverse colon the discharge through the fistula continued. Cannon thinks such a reversed current is certainly consistent with effective anastalsis in man. *X*-ray observations have also shown the condition in man as reported by Rieder, *i.e.*, a to and fro churning or shifting movement of the contents of the cecum and ascending colon.

The presence of such antiperistaltic waves forcing the colonic contents downward into the cecum, together with the entrance of the semifluid contents of the small intestine, must of necessity cause a stasis in the lowermost portion of the cecum and ascending colon. As described by Cannon, "the stagnant mixture of indigestable matter, food, cellulose, water and bacteria, presents an ideal condition for putrefactive and fermentative decomposition."

The appendix with its opening in the lower part of the cecum is favorably situated for receiving and retaining within its lumen any portions of the intestinal contents plus bacteria which may be forced into it.

The frequency of fecal concretions in the appendix can only be explained in this manner. Such a condition of stasis in the cecum may also explain the typhilitis and perityphilitis of the older writers and undoubtedly accounts for the frequent involvement of the appendix by those changes which eventually lead to an acute inflammation of the organ.

Another condition of the cecum which produces stasis of its contents and which has an etiologic relationship to appendicitis is that described by Wilms(6), to which he has given the name of cecum mobile.

Wilms endeavors to establish an hitherto undescribed clinical entity. In this condition the cecum is abnormally long and mobile, it may be greatly displaced, distended or have a high degree of atony of its walls. It is closely allied with obstipation its principal feature being a stasis of the intestinal contents in this part of the alimentary canal. The condition is nearly always associated with chronic appendicitis but is sometimes seen with a normal appendix.

Wilms ascribes the failure to cure chronic appendicitis by appendectomy to the presence of cecum mobile.

On account of the stasis which it produces, cecum mobile must be considered as one of the predisposing factors in the production of chronic inflammations of the appendix.

Adhesions about the ascending colon and cecum, the so-called Jackson's membrane or pericolitis dextra,(8) are often seen in operations for chronic appendicitis, they are often associated with the band of adhesions as described by Lane(11) which crosses the ileum near its terminal portion. Many theories have been advanced regarding the etiology of such adhesions.

Jackson(8) has recently discussed the various theories offered in explanation of their origin.

The two principal theories advanced are (a) the inflammatory and (b) the congenital. The inflammatory theory as advanced by Gerster(9) supposes a preexisting colitis, while others think that these membranes are the result of old inflammatory processes about the appendix and gall-bladder region. In the congenital theory the causes given are: faulty development, failure of the cecum to settle down after rotation of the colon and the attachment of portions of the omentum to the cecum during rotation of the large bowel. The congenital theory seems to be gaining in favor as it corresponds more closely than does any other theory to the minute anatomy of such membranes. Clark and Kuehne(10) have concluded that Lane's kink is of congenital origin and that in the female it is continuous with a fold of the broad ligament.

As Lane(11) has poinetd out, adhesions of the appendix, cecum and ascending colon are frequently associated with a kink of the ileum, therefore congenital adhesions of the appendix itself, the result of rotation of the colon and descent of the cecum, must certainly occur and should be emphasized as one of the predisposing causes of appendicitis.

Obstipation and intestinal stasis are as a rule the results of colonic adhesions and as such they are important factors in the production of those inflammations which eventually lead to an acute attack of appendicitis.

SUMMARY.

1. Infection of the vermiform appendix is of enterogenic origin, and as a rule is a slow process resulting from stasis of intestinal contents in the cecum.

2. Appendicitis is essentially a chronic disease. Chronic inflammatory changes in the appendix usually precede the acute attack.

3. Stasis in the cecum is favored by the antiperistalsis of the ascending colon in combination with a mobile cecum or adhesions about the ileocecal junction.

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DISCUSSION ON THE PAPERS OF DR. GOLDSPOHN AND DR. JACOBSON.

Dr. William Seaman Bainbridge of New York City, agreed with the essayists who urgently advised the removal of the appendix whenever one comes within reasonable distance of it while operating for other intraabdominal conditions. About ten years ago, while discussing this subject with several gastro-intestinal specialists, the objection was made that a number of cases had come under their care in which there was more stasis in the

caput coli and ascending colon after removal of the appendix than had been noted in similar cases in which there had been no appendix operation. At that time the chronic type of appendicitis, not the acute, was under discussion, and the claim was made that in a certain proportion of cases the surgeon caused a definite weakening of the ascending gut and the caput coli. This contention caused him to review, in his mind, his duties in the "dead house" as well as on living subjects. These studies resulted in what he believed to be an important point that is sometimes overlooked in the removal of the appendix; viz., *failure to again attach the caput coli in such way that it can best perform its function.* In order to do this, the longitudinal bands which arise at the base of the appendix must be given a strong point of origin, just as they had before removal of the appendix, and not left without proper support. Sometimes, when the appendix is removed, no matter by what method, it is pulled away from this point of fixation, the longitudinal bands cannot perform their function properly, the cecum does not empty itself, and the caput coli becomes more of a cesspool of putrefactive material. It is, therefore, of importance that the three longitudinal bands be properly approximated, so that they may exercise their function, which, it must be borne in mind, is apart from that of the circular muscular fibers. Unless this function is maintained by proper approximation, the longitudinal muscles atrophy, peristalsis is interfered with, intestinal stasis results, and the gastrointestinal specialist is vindicated in the contention to which the speaker referred.

Dr. Bainbridge illustrated on the blackboard the points made with reference to the longitudinal bands and the caput coli.

His method of removal is that first described by him some years ago in a monograph on operative gynecology. After removal of the appendix the opening in the bowel is closed by inverting the edges of the stump with forceps as the purse-string suture is tied. Subsequently a celluloid linen stitch is introduced into the ends of the longitudinal bands, encircling the line of sutures already introduced. The sutures used to ligate the mesoappendix, having been left long, one or more of these are tied to the linen holding the base of the longitudinal muscles. All raw surfaces on the mesoappendix is turned in, or sutured over the end of the caput coli. Thus not only is the stump of the appendix securely closed and all raw surfaces treated so as to prevent adhesions, but in addition the important function of the longitudinal bands of the large intestine is not interfered with, as these muscles are again given a strong point of origin and not left without proper support. Some at least of the troublesome bowel symptoms following in the train of appendicular operations may thus in a measure be prevented.

Dr. Henry S. Lott, Winston, North Carolina.—For the past year my treatment of appendicitis has been very simple. If it is possible, I get the cases early; I give no purgatives, and

make no local applications. I just take out the appendix. If the cases are clean, I close them; if they are dirty or even markedly borderline cases, I put in a gauze wick, and keep them on the right side, with a pillow between the knees, letting the wick alone until it is loose. About the fourth or fifth day, I empty the lower bowel with a normal saline enema, and keep them chiefly on fluids for about a week.

And the beauty of it all is, that they are comfortable and get well. The few exceptions are the delayed cases, with general peritonitis and fatal infection.

Dr. Louis Frank, Louisville.—It has been my practice in putting in a purse-string suture to prevent the splitting of the peritoneum of the mesentery of the appendix, to catch it up as the purse-string goes around and thus holds it in place. The suture that is inserted goes around the appendix. In that suture the three bands will be caught. I cannot conceive that a purse-string suture put in the caput coli, after the bands are brought together, will not turn them in. If the mesentery is caught, which I believe is the practice of a great many men, to prevent splitting, we will see very little of the trouble spoken of. The bands can be held by any purse-string suture.

Dr. E. Gustav Zinke, Cincinnati.—The point made by Dr. Bainbridge is to me a new and very important one. I am much impressed with it. I have done the operaion which he described, but not for the reason he mentions. I did it merely to leave the cecum in the position where I found it.

Dr. Bainbridge, continuing the discussion, said Dr. Noble had been discussing something else rather than the suggestion he had made. He reiterated his contention that the longitudinal bands do not perform the same function as do the circular fibers. Dr. Noble spoke of the fibers in the region of the ileocecal valve; the speaker was talking about the point at which the longitudinal fibers are attached, or have their origin. This point is the head of the colon, where the appendix is situated.

Dr. Thomas B. Noble, Indianapolis.—I have been very much interested in what Dr. Bainbridge has brought before us. His idea is rather unique to me, and yet I am frank to say, I am not ready to accept it *in toto*. I do not wish to make any criticism of his methods. I think he is attaching to this organ a function which it hardly possesses and which we can question for various reasons. The first reason is, that our theory heretofore has always been that the appendix is a rudimentary organ which nature is trying to rid herself of in man. If we are to study the appendix in that light, we have to associate it with the lower animals. It is an interesting observation that we find it 8 feet in length as a cecal blind gut in the horse, and about 18 or 20 inches in length in the cow. It is 12 inches or so in the rabbit; it is 4 or 5 inches in the cat. In the deer it is about 15 inches in length. In all of these animals it bears a distinct abdominal function just the same as the intestine. Dr Bainbridge is

ascribing to these fibers and their relationship a sort of leverage function. The quadriceps extensor acts as a lever to a fixed point. The head of the colon or the ileocecal valve, to which he is attaching these longitudinal fibers to contract at a fixed point, is a point that I do not believe is well taken, because it is not a fixed point. It is a movable one. Then again, it seems to me, he is attaching to the longitudinal bands a function which they do not possess, as I have observed that they have no contractile power. They are not possessed of muscle, but are fixed points for the transverse fibers of the colon to pull against, and not in a longitudinal way. I have observed the colon often times in a state of contraction, and I have not seen this sort of function which he describes, namely, a contractile longitudinal function, but it is a contractile one laterally, and these fibers, it seems to me, are for the purpose of offering resistance to the laterally contracting fibers.

Dr. Albert Goldspohn, Chicago (closing the discussion).—I wish to thank the gentlemen for calling attention to the improvement in technic. Our attention has been called to the function of the longitudinal bands, whatever that may be. If these bands have enough of muscle in them to contract, it will make some difference whether the point of the cecum has some attachment below or not. It seems to me, however, that there is much more muscular substance in the circular layer, and the contraction of the circular muscles enclosing the pouches empties the cecum. I will simply mention a part of my paper which I was not permitted to read on account of lack of time.

The chronic appendix is on trial in the medical world. It is charged with causing organic disease of the gall-bladder and of the stomach, and an infinite amount of minor medical ailments of the same nature, but of lesser degree. Circumstantial evidence is so accumulating as the result of much clinical and pathological investigation and animal experimentation during the last ten years that it can scarcely escape conviction. Although it is all circumstantial evidence, it is so strong that we have no other way of explaining the results. It has been proven to be the one weak spot, the locus minoris resistentiæ in the entire alimentary tract. How is this influence transmitted? For the answer to this question I must advise a careful reading of my paper.

OMENTAL CYSTS.

(With Report of a Case.)

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(With Two Illustrations.)

The literature on the subject of omental cysts is not only scant, but shows a great variety of opinions as to the interpretation of the word cyst. A perusal of reported cases shows that practically every variety of tumor or growth, in which there was fluid present, has been included under that head. The word cyst, as it is generally used, and particularly with respect to the comparatively few cases that have occurred in the omentum, conveys practically no idea of the character of growth which it is presumed to describe. This is true, in a measure, in the use of the word in general surgical literature, and it would seem that, if we are to use the term cyst, it should be restricted to mean localized collection of fluid within a limiting membrane without definite reference to the pathology, whereas the term cystoma could, and should, be more properly used to characterize actual, new, cystic growths, in which we have secreting cyst spaces, and a definite, constant, neoplastic formation.

The subject, then, of true omental cystomata, as the reporter's case should properly be called, becomes of some interest as a pathological study notwithstanding its great rarity.

The first case of this kind was described by Gairdner, in 1851, and since then there have been, according to some reporters—Dowd, for instance—some thirty-seven cases recorded. Since Dowd's report, Stillman has recorded two cases, and there have been three additional cases reported by Markoe, which, with one other found by me but overlooked by Stillman and my own case, would bring the total number to forty-four.

A careful analysis of these, however (which, by the way, has been made by Stillman in his excellent report before the Section on Surgery, at meeting of the A. M. A., in 1911), shows that, at the most, only nineteen of the cases at the time of his report

are to be classed as true cystomata. I have found one additional case, undoubtedly a true cystoma, reported by Brandt, and my own case is unquestionably of such character. Of the three cases reported by Markoe, there is some question as to the pathology in two of them, and I would also question Case XVII of Stillman's, whose analysis of cases accompanies this report. The original report of this case is not sufficiently clear for one to judge of its exact character, and we have only the reporter's opinion as a basis for interpretation, and that is not positive, as the reporter says: "Seemingly it was a cyst of the omentum." The additional cases which Stillman reports are not included in his tabulation[1] which is as follows:

Case I (Gairdner(1)). Woman, age not stated, died unexpectedly. At autopsy she was found to have a large fibroid uterus. In addition, a cyst was found between the folds of the great omentum measuring between 3 and 4 inches in length, and from 1/2 inch to 1 1/2 inches diameter. It contained a transparent colorless serum, containing numerous flocculi.

Case II (Gooding(2)). Girl, aged eighteen, noticed a lump about the size of a hen's egg low down in the right iliac fossa, which was painful, chiefly at menstruation. At time of operation, four years later, it was the size of a cocoanut. It was diagnosed as an ovarian cyst with a long pedicle. Operation disclosed a cyst in the gastrocolic mesentery firmly adherent to the parietal peritoneum and imbedded in the folds of the omentum. There was no pedicle.

Case III (Spencer Wells(3)). Girl, aged five, had had a large abdomen since infancy, growing steadily for part two years. On operation a single cyst of the omentum was found attached to the abdominal wall and cecum. It contained four pints of a clear, watery fluid. In the upper part of the omentum were a few small cyst-like collections of fluid resembling grapes. Some were removed, others simply pricked. A specimen was examined by Ransom, who found it to consist of three very thin-walled cysts, the largest holding a quart, the next half a pint, the smallest the size of an egg. There was no endothelium on the inner surface. He states that it was not hydatid; but he thought perhaps it was inflammatory.

Case IV (Erdheim(4)). Woman, aged twenty-two, had a tumor, first discovered five years before, without known cause;

[1] Doubtless other cases of omental cyst have been observed, but there has been failure to report them, either through lack of recognition of the character of the tumor, or lack of knowledge of the rarity of the condition.

according to the patient's account it reached its present growth in fourteen days. Operation disclosed a bluish, transparent cyst wall adherent over a wide area and covered with omentum. The tumor reached from the transverse colon to the bladder and had no connection with any of the pelvic organs.

Case V (Marfan(5)). The patient was a girl, aged two and one-half years. Her mother had noticed that the abdomen had always been large and at the age of fifteen months the enlargement began to increase and continued to do so steadily for the succeeding year. The general health was not affected until a few weeks before operation, when the child became emaciated. An aspirating needle was inserted and about two liters of black hemorrhagic fluid evacuated. This gradually reaccumulated, and it was decided to operate. Operation revealed a multilocular cyst within the folds of great omentum. It had a pedicle and contained a large quantity of bloody fluid.

Case VI (Hearn(6)). The patient was a boy, aged eight. At birth, his physicians noted that the abdomen was markedly distended. This disappeared after a few weeks and was not again noticeable until he had become six years of age, when the abdomen began to distend. In the meantime, he enjoyed good health. Although the abdomen increased rapidly in size, the only difficulties he experienced were those due to distention and pressure. The abdomen was enormous, measuring 44 inches in circumference, and an omental cyst was suspected, owing to lack of symptoms of other troubles. Operation disclosed a cyst containing a dark yellowish-brown, turbid fluid and many other cysts. After evacuating a number, the mass was drawn out and found to be attached to the great omentum, between the folds of which it had developed. The fluid was alkaline in reaction and contained a large amount of albumin. Jacobi regarded this as a case of hydatid cyst and instanced it as a warning of the care and circumspection required in making an accurate diagnosis in cases of cyst of the omentum. From the history, however, I cannot see why this statement should have been made.

Case VII (Braithwaite(7)). Girl, aged four, measured 22 3/4 inches at level of umbilicus; this had increased during two months. The tumor was found to be entirely within the folds of the great omentum and with the exception of adhesions to the intestine was easily removed. It contained 3 1/2 pints of fluid.

CASE VIII (Jacobi(8)).—The patient was a girl, aged seven. Four years previously the abdomen began to swell and the child lost weight. A diagnosis of tuberculous peritonitis was made, the abdomen tapped and 2 quarts of a clear, slightly bloody serum was drawn off. After two years the swelling returned and was tapped a second time. Subsequently it was operated on. Operation disclosed a large cyst, containing about 2 quarts of fluid, with a number of recesses communicating with the main cyst. It involved the greater part of the great omentum and narrowed into two pedicles as it approached the colon. The cyst was lined externally and internally with endothelium. The contents were gelatinous and finely granulated, and consisted of coagulated serum with multinuclear and eosinic forms of leucocytes, endothelial cells and a few red blood-cells. Staining by Weigert's method showed absence of fibrin.

CASE IX (Marsh and Monsarratt(9)).—The patient was a girl, aged one year eight months, whose abdomen was noticed to be enlarged about four months previously, but there was no complaint of pain. It was tapped four times. Operation showed a thin-walled multilocular cyst springing from the gastrocolic omentum and entirely enveloped in it. It contained about 10 pints, and consisted of one large cyst and many independent smaller ones, and it had an attachment to the right ilac fossa. The external surface was covered with endothelium; internally it was lined by a coat of fine connective tissue containing numerous blood-vessels. The walls of the smaller cysts were better defined and afforded better support for the blood-vessels than in the large cyst, where the vessels were large and thin-walled.

CASE X (Schramm(10)).—Female, aged one year. Swelling of the abdomen noticed four months before. Operation disclosed the fact that the entire omentum was made up of a conglomeration of cysts, varying in size from that of a nut to twice the size of the fist. About 3 or 4 cm. of the omentum, next the transverse colon, was quite normal. The cysts contained a clear rose-colored fluid.

CASE XI (Boyd(11)).—The patient was a boy, aged eleven, whose health was excellent until a few months before operation, at which time his abdomen began to swell and the swelling steadily increased. He had constant pain in the lower abdomen, but never of a severe character, and he had become much emaciated. Operation disclosed a large, thin-walled cyst covered by and occupying the cavity of the great omentum and

containing a large amount of greenish-brown fluid. The cyst was attached to the pancreas, but did not spring from it.

Case XII (Schwarzenberger(12)).—Girl, aged four and three-quarters years, was operated on by Czerny. The cyst contained 3 liters of a clear serous fluid, and was multilocular. It was diagnosed as a lymph-cyst of the great omentum.

Case XIII (Young(13)).—Girl, aged nine and one-half years, had a swelling, noticed for more than a year previously. There was no pain. At operation, a thin-walled cyst was found containing many other cysts. It involved the anterior layers of the great omentum, part of which was normal, and adherent to the stomach. It contained 32 pints, besides 5 or 6 that were lost on the floor, of a dark brown fluid, which was evidently broken-down blood and serum. The fluid in the cyst was not examined.

Case XIV (Matthews(14)).—Boy, aged eight, had complained nine months previously of pain in the left side, following which there was a gradual distention of the abdomen. This continued till the abdomen measured 27 inches. On operation a cyst was found containing 6 pints of a dark brown fluid. It was attached to the transverse colon by a thick pedicle made up of omentum.

Case XV (Fort(15)).—Girl, aged two and one-half, had an abdominal enlargement, noticed eighteen months previously. At the time of operation the abdomen measured 28 inches. There were no symptoms other than dyspnea. Operation disclosed a cyst between the layers of the great omentum containing an enormous collection of fluid. There was an absence of distinct capsule other than the peritoneal covering of the omentum, the fluid being between the folds of the omentum.

Case XVI (Wakefield(16)).—Boy, aged four, had an enlargement of the abdomen; noticed at least two years before. At the time of the operation, the abdomen was enormously distended. Operation disclosed a tumor larger than a man's head, consisting of a number of various sized thin- and clear-walled cyst chambers, the bulk of the mass being made up of a single cyst. The fluid contained in the cyst was clear, straw-colored and neutral in reaction. It coagulated on heating with a drop of acetic acid.

Case XVII (Rodman(17)).—Patient was a girl, aged seventeen. On operation, a cyst which, together with its contents, weighed 60 pounds, was found beneath the parietal peritoneum, covered by another layer of peritoneum. It had no pedicle, was

unilocular and contained a clear fluid. It shelled out like a walnut, only one small vessel being tied.

CASE XVIII (Seefisch(18)).—Patient was a boy, aged four, whose mother had noticed a swelling in the abdomen a short time before. On operation, an enormous cyst was found dependent from the hepatic flexure of the colon by a pedicle the thickness of a lead-pencil. The contents measured from 2 1/2 to 3 liters. The wall of the cyst was very thin and consisted only of the web of the great omentum.

CASE XIX (Gifford(19)).—Boy, aged six, had a swelling, first noticed six months previously, when the patient complained of pain in umbilical and hypogastric regions. On operation, a cyst the size of a cocoanut was found in the substance of the omentum and was adherent to the anterior abdominal wall. The omentum was ligated and divided and the cyst easily removed. It was multilocular and contained a clear straw-colored fluid. The interior of the cyst wall was lined with a smooth membrane.

The additional cases mentioned by Stillman consist of one reported by Reginald H. Fitz, in the Lane lectures in San Francisco, in 1910. It was undoubtedly a true lymphangioma of the omentum, occurring in a woman who had a fibroid tumor to which the omentum was adherent. The details of this case I have been unable to secure, as Dr. Fitz has not yet published his lectures.

Stillman's case was that of a woman, forty-two years of age; married, with one child, who was operated on account of an abdominal tumor diagnosticated as a pedunculated myofibroma of the uterus. At operation the tumor was found attached to the border of the great omentum, which was the seat of numerous, elongated, tortuous, thin-walled cysts, distributed through the omentum, involving similarly the gastrocolic omentum. His case resembles in description my own case, and is similar to that of Schramm, reported in 1903, and to that of Brewster, above mentioned, as reported by Fitz.

In Dowd's paper, in the *Annals of Surgery*, I find the case mentioned above, that of Brandt (from the *Centralblatt für Gynäkologie*, 1894, page 991) which is reported as a case of lymphadenectasis, undoubtedly a true lymphangioma of the omentum.

Hasbrouck's case, recorded in the *Annals of Surgery*, has been rejected from my own list, as well as from that of Stillman, as being a case of cystic degeneration of a sarcoma. Hasbrouck himself says: "The cell arrangement resembles some form of angiosarcoma. The tumor was partly solid and undoubtedly

malignant, and not a true cyst." The reporter speaks of it as a mesothelioma, and in his collected cases reports several growths which I would unhesitatingly reject as not belonging to the class of tumors under consideration. In his paper he mentions thirty-four cases collected from the *Index Medicus*, of which, according to his interpretation, only nineteen could be classified as true cysts of the omentum.

Undoubtedly, some of the growths reported as being of omental origin were of ovarian and uterine derivation, belonging to that class of tumors with which we are all familiar—the wandering type, where the pedicle having become attenuated, a new and more abundant blood supply becomes established from some other structure, the original attachment finally disappearing. I have personally seen a dermoid of this character attached to the bladder, and a fibroid attached to the intestine. In Dowd's paper, to which reference has been made, and which is of much scientific value, there are reported the cases of Catman, Waldy, Edebohls, and others, which cannot be classed as belonging to the type of tumors represented by the specimen presented. Dowd's own case is not a true cyst in the strictest sense of the word, admits in his conclusions, "that it was an hematoma of the omentum, edematous on account of a twist in the pedicle." His paper, however, is of much interest and worthy of perusal.

To a student of these cases it will be very difficult, on account of insufficient data, to fix definitely the classification to which Dowd's case belongs, and we have only his own opinion that it was an hematoma as confirmatory to our analysis of the case.

The last cases reported are those of Markoe and McPherson, in the *Bulletin of the Lying-In Hospital of the City of New York*, for March, 1912. Their first case should be excluded, as it is evidently a torsion of an omentum which had become incarcerated by a suspension band. Their Case III seems to me to have been a cyst of the infundibuliform process of the peritoneum about the round ligament, as the tumor is described as extending through the ring into the abdominal cavity. My own opinion of the case, from the description given, is that it was of this character, and that the omentum had been projected into the ring and became adherent to the growing tumor.

I have abstracted Markoe's cases as follows:

Case I.—A nurse, who had been previously operated upon for retroversion, for which a ventral fixation was performed.

In this case a small portion of the omentum was twisted upon itself like a cord and led down into the pelvis between the right round ligament and a fibrous band, which consisted of the former ventral suspension ligament between the uterus and the anterior abdominal wall. This portion of the omentum had stretched to about 7 cm. in length, ending in a mass the size and shape of a small hen's egg, which was greatly congested and filled with blood. It was not adherent to any of the surrounding tissues and was easily brought out into the abdominal wound and removed between two ligatures.

Case II.—Patient applied to hospital for care during confinement, being in labor at the time. Examination of the abdomen revealed, just above the fundus of the uterus between the ensiform cartilage and umbilicus, a movable tumor which changed its position with respiration. This tumor was not particularly tender and could be easily moved about from one side to the other by the hand of the examiner. Seventeen days after recovery from delivery, which was uneventful, it was decided to remove the tumor mentioned. Examination at this time revealed another mass the size of an orange which seemed to be located in the left broad ligament; this was tender but not movable. Accordingly, under ether anesthesia, a median incision, 10 cm. in length, from the symphysis upward, was made, and on opening the peritoneum there appeared in the wound a tumor the size of an orange, evidently a growth from the omentum. To this was attached the vermiform appendix by many firm adhesions. The omentum was also adherent to the abdominal wall by moderately strong adhesions, which were cut and tied, care being taken not to interfere with the circulation of the omentum. At the same time the appendix was detached from the cecum by the purse-string method, leaving it attached to the omental tumor, both being removed together. The pelvis was then explored and a normally involuted uterus found, which was pushed over toward the right side by another tumor the size of a small grape-fruit, lying anterior to the broad ligament and behind the bladder. This mass was firmly adherent and plainly a part of the omentum. With great care it was freed and upon removal proved to be a second omental cyst. Before closing the abdomen, inspection showed that both ovaries were normal and not involved in the adhesions.

Case III.—Patient aged twenty-seven; ii-para. Stated that she had had a tumor in the inguinal region since birth, which

she thought had enlarged somewhat in the last year, but was not certain on this point. Physical examination showed a woman well developed and well nourished, with nothing of importance noted except a tumor the size of a grape-fruit in the right groin. This was firm, slightly fluctuating and gave no evidence of impulse on coughing. It could not be reduced and was somewhat tender, probably owing to the pressure of the patient's corset. Bimanual examination showed the pelvic organs to be in normal condition with the exception of a retroversion of the uterus, and no connection between the tumor and the pelvic adnexa could be made out. The case was thought to be one of inguinal hernia, with the possibility of the sac containing an ovary and tube, but on cutting down over the mass it was discovered to be cystic, filled with fluid and found to be an omental cyst, which had prolapsed through the inguinal canal, and which was attached by a long pedicle. Inasmuch as an operation on the uterus was contemplated, a second incision in the median line was made and this pedicle, which sprang from the great omentum above, was tied off and the cyst was easily removed by way of the inguinal incision. The abdominal wound was closed in the usual way and the hernia then repaired in the ordinary Bassini manner.

The history of my own case and the full report is as follows:

Patient Mrs. J. B. M., æt. twenty-eight; mother of two children, whose family history was negative as to tuberculosis, tumors, etc., had not been seen by her family physician, until a few days before she was referred to me, since the birth of her last child one year previously. One year ago, at the birth of this last child, she had had a profuse hemorrhage, and it was thought at that time that she might have a fibroid of the uterus. Two months after the last labor there was some descent of the uterus, though this gave her no trouble after the introduction of a pessary. Three months later (seven months ago) she noticed an enlargement in the pelvis which had been gradually increasing in size. She had had a profuse discharge with a foul odor for the past three months, but attributed this to the pessary which she had been wearing since the prolapse first made its appearance. Her bowels were constipated. There was no trouble about the bladder, no loss or gain in flesh, and except for the presence of the tumor she was in comparatively good health.

Physical examination showed heart and lungs normal. A cystic tumor was palpable in the abdomen in the median line,

half of it above the umbilicus and the other half below. There was a protrusion of the abdomen about the size of two fists. Per vaginam a number of nodules could be felt, apparently cystic in character, filling up the entire pelvis. There was apparently no fluid within the abdomen, but a diagnosis of probable intraligamentary ovarian cystoma was made.

Fig. 1.—Omentum showing cystomata.

She came to operation on March 22. Under anesthesia the growth was susceptible of limited movement within the abdomen. Upon putting the patient in the Trendelenburg position most of the mass seemed to fall away from the pelvis toward the diaphragm, and my assistant suggested that we probably had to do with a cyst of the omentum.

The operation, which was made through a right rectus incision extending from the umbilicus to the pubes, revealed a multilocular cyst of the omentum, with apparent implantation

metastasis, as we thought at the time, on all the peritoneal surfaces, the cecum, small gut, mesentery, uterus, anterior and posterior layers of the broad ligament, and the tubes and ovaries were covered with the same character of cysts that composed the omental mass. These were very easily separated from each other and from their attachments to the parietal wall and other organs, the largest mass being in the omentum. The walls of the cysts were thin and their contents clear serum, and they varied in size from that of a pea to that of an egg. The various loculi and cysts were easily separated from one another. The ovaries were of normal size and appearance, except for the

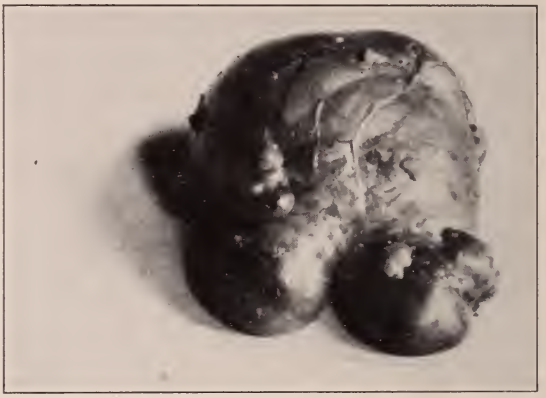

FIG. 2.—Cyst from over external ring (natural size).

attachment of the cystic growths mentioned. The tubes were normal. The uterus was normal in size and with soft walls. There was a bifurcated gall-bladder, the gall-bladder itself appearing to be pulled down by the attachment of one of the cysts to one portion of it. The liver was normal with smooth sharp edges. There was a cyst the size of a hen's egg in the groin over the external abdominal ring. This cyst did not extend within the abdomen, lying entirely external to the ring, apparently attached to the round ligament. There was no hernia nor was the ring patent. After closure of the abdomen this latter cyst was removed. Its appearance was similar to, and its contents apparently the same as the growths in the omentum.

Both wounds were closed without drainage and the patient discharged from the hospital, well, at the end of two weeks.

Macroscopical examination of the specimen shows that the

tumor "consists of numerous globular masses of tissue filled with slightly opalescent, thin and slightly gelatinous material. These globular masses vary in size from a pin-head to a diameter of 3 to 4 cm. They are held together with a rather vascular connective-tissue framework. Remains of omental tissue are hard to find, but here and there masses of omental fat can be detected. Other masses of tissue, much smaller in size, present a similar appearance. Macroscopical diagnosis: Multiple cyst of the omentum.

"Examination of the centrifugalized fluid shows no echinococcus hooklets.

"*Microscopical Examination.*—The colloid-like material which fills the cyst-like dilatations presents a homogenous appearance. The connective-tissue framework is made up of a very cellular or edematous connective tissue. Here and there are numerous thin-walled blood-vessels and spaces, probably lymph spaces, lined with endothelial cells and devoid of colloid material."

It would seem, from examination of my case, that Jacobi's theory as to the origin of these tumors is borne out, he believing, with Rokitansky, who, in his Lehrbuch der Anatomie, describes tumors of the omentum, that they are "of lymphatic origin and the result either of dilatation of the lymph veins or a cystic degeneration of the lymph nodes."

It is believed by a great many reporters that these growths are congenital. As Fort says, there are three things that stand out in connection with these cases; (1) the impossibility of preoperative diagnosis; (2) greater frequency in children, 50 per cent. occurring under the age of ten and 65 per cent. under the age of twenty, which leads to the belief that they are of congenital origin; and (3) greater frequency of these growths in women.

The diagnostic features I do not intend to discuss in this paper, as they are of minor interest. My chief object in reporting this case is to place it upon record in the archives of this Society, deeming it of sufficient interest and rarity to justify such a wish upon my part.

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A CASE OF FLOATING SPLEEN WITH TWISTED PEDICLE. CELIOTOMY. SPLENECTOMY. RECOVERY.

BY

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THE patient was a woman, fifty years of age, and unmarried. When I first saw her, she had been suffering for several hours and was in the midst of a classic group of symptoms indicating an accident to some intraabdominal organ. This group consisted of recurrent, "griping" pain, with some tenesmus of the lower bowel, together with paroxysmal nausea and vomiting, with pallor, and shock which was marked, but of a mild degree.

A readily palpable and freely movable tumor could be easily located at rest, well over in the left flank and just beneath the floating ribs. This tumor could be carried to about any position in the abdominal or pelvic cavities without giving the patient pain, and, when freed, returned to its original location. The thickness of the abdominal wall was such that no distinctive anatomic landmarks were discernible.

The patient was removed to the hospital, and kept under very close observation for forty-eight hours. In this time the acute symptoms became less intense. The menstrual history, both before and since the climacteric, seemed uneventful, and threw no light upon the present condition. Rectal examination gave a negative result. There had been no kidney crises; and urinalysis showed a very few casts, with just a trace of albumen; while, to make the picture more mystifying, a blood analysis gave hemoglobin 85 per cent. with normal leucocytes.

Assuring the patient that in spite of the fact of her greater comfort, the condition was one to be met fairly by surgical measures alone, brought ready consent for operation with its hope for future safety.

Under ether anesthesia the abdomen was opened by an ample median incision. Tracking immediately down into the pelvis, the touch revealed a normal postclimacteric uterus, with normal appendages attached. Leaving the pelvis and invading the left abdominal cavity, the mysterious tumor was easily located just

protruding from its home, and in response to gentle "teasing," with the finger tips, it came promptly forward and was delivered through the abdominal incision. Upon inspection this "wanderer" was found to be a spleen of about twice the normal size, much congested and with a twisted pedicle which had been partially released. Considering both past and future, its removal was deemed best.

The broad pedicle was tied off in sections, securing the large vessels with silk and the intervening structures with catgut and a dry, clean stump dropped back into the abdomen. Being satisfied with this pathology, little further search was made and the abdomen was closed with eight through-and-through silk-worm-gut sutures, and a dry gauze dressing applied.

For ten days after the operation there was no feature worthy of note. The nausea was somewhat distressing and pulse and temperature exhibited some slight fluctuations. On the eleventh day the dressing was opened; the incision was perfectly clean and the stitches, all dry, were removed.

On the night of the eleventh day a mild phlebitis developed in the left leg. This gave some pain for forty-eight hours, with swelling of the limb, and an elevation of temperature of one-half to one and a half degrees for about two weeks. With a bandage, absolute rest, and elevation of the limb this gradually subsided, and the convalescence otherwise was really uneventful.

About three weeks after the return to her home and just two months from the operation a careful blood analysis, made by Doctor W. M. Johnson, gave the following result:

Hemoglobin	80 per cent.
Leuoccytes	15,400

Differential Count.

Polymorphonuclears	62 per cent.
Lymphocytes	34 per cent.
Large mononuclears	2.5 per cent.
Eosinophiles	.5 per cent.
Basophiles	1 per cent.

The phlebitis, which I believe was mechanical and not infective, has no doubt contributed to the increase of leucocytes, and it has also been formidably obstructive to the progress of her convalescence.

DISCUSSION ON THE PAPER OF DR. LOTT.

Dr. Louis Frank, Louisville.—Along the line of this paper I had occasion in the early part of the year to operate upon a case of wandering spleen. The tumor was diagnosed, but I thought I had probably to do with a floating kidney. The woman had marked gastroptosis and prolapse of all abdominal organs which were fixed in place by operation, the work being begun below by fixing the uterus. At the time the incision was made below, I palpated the tumor and found it was a spleen, which was easily delivered through the low incision made above the pubes. It was considerably enlarged, probably a third larger than normal, and it was delivered with the greatest ease and with 2 or 3 inches of the pedicle. I did not remove it. I wanted to try fixation of the spleen to see if it would work. After opening the abdomen and bringing up the stomach and colon, I then stripped back the overlying skin, exposing the fascia, and passed three heavy catgut sutures through the pedicle of the spleen, which consisted very largely of peritoneum, in addition to the very much thickened vessels. The pedicle was probably as broad as four fingers, but reflected from the large vessels, entering and passing out of the spleen, particularly the veins. There were quite large processes of peritoneum, giving ample surface through which to pass the sutures. I believe there were three sutures passed through the pedicle, and the spleen was swung in position or place, not exactly where it belonged, but as near as we could, and the sutures passed through the wall from within, tied over the fascia just below and on a line with the lower margin of the rib. Thus far this spleen has remained in position. The woman has been completely relieved of symptoms; it has been now some seven months since the operation and during this time I have had her under observation. I have permission to remove the spleen if it gives any further trouble or should again become dislodged or movable. But thus far it has remained perfectly fixed and she is apparently relieved. My reason for not removing the spleen was that I did not know the condition of her blood, and I also wanted to see whether permanent fixation could be secured by suturing the spleen in this manner.

Dr. Walter B. Dorsett, St. Louis.—I do not believe that medical literature is teeming with the pathology of the spleen. In fact, I believe we know very little about the pathology of the spleen. As a matter of fact, people living in countries where malaria is very prevalent often suffer from enlargement of the spleen, and I desire to speak of a case that occurred in my practice four or five years ago which I put under the head of "mistakes in diagnosis." It was a case in which I thought I had to deal with a tumor connected with the uterus. When I opened the abdomen I found a large mass there that took me some time to recognize. I suppose I would have done so had I

the courage to carry out my first intention. The patient was put in this position with the foot of the bed elevated and large doses of quinine given for six weeks, which reduced the size of the spleen, so that the woman suffered very little inconvenience. She wore a good well-fitting abdominal bandage and she has had no inconvenience from it since.

Dr. Frank Glasgow of St Louis has removed the spleen on two or three occasions. In one case the patient presented practically the same symptoms as those from which my patient suffered. I believe surgery of the spleen has not been undertaken to the extent in which we can give positive results from surgical intervention.

Dr. Thomas B. Noble, Indianapolis.—Surgery of the spleen resolves itself into splenectomy as a rule, and that for cysts, newgrowths and injuries. As Dr. Dorsett has stated, our literature is small in quantity relative to the surgery of this organ about which we know very little. I have not had any experience in splenopexy.

With reference to the treatment of most of the pathologic conditions of the spleen, the advice given may be summed up in the word splenectomy. It would seem from a perusal of what literature we have that the shortest and safest route for the treatment of such conditions as arise or as demand surgery, is that the spleen be ligated and removed. This is the easiest and probably the safest way.

Very recently I had the experience of being called to treat two cases of rupture of the spleen. The cause of the rupture in both instances was that of two men running together, that is to say, two men came together, but there were two sets of two fellows who came together in catching a ball and one of the two of each set had a rupture of his spleen. In one case the hemorrhage was very acute and the abdomen was found filled with blood. I operated the next day; the next morning following the afternoon on which the injury had been produced. The diagnosis in these cases was easy. They gave every evidence of internal hemorrhage, and it is known that with violence, producing internal hemorrhage, the hemorrhage comes from the spleen more readily than from other organs. The tenderness over this region, the tumefaction, and the dullness made the diagnosis very positive, and so I found in the first case the abdomen filled with blood and the man almost exsanguinated. I found a lower segment had been taken away, or torn away from the spleen clear down to the hilum, making a deep rent through the entire body of the organ to the hilum. It would have been an easy matter to have pulled the spleen up, ligate it and remove it. I did not want to do so, for I feel that a spleen is worth saving when it can be saved. I was able to suture the capsule around the rim down to the hilum and stop the marginal bleeding, but I was unable to control the hemorrhage at the hilum. Holding the spleen I observed it continued to ooze. By han-

dling the organ and squeezing it and bending it upon itself, increasing its disc-like character, increasing its flexion, I found I was then able to stop the bleeding. It occurred to me, if I were able to so hold the organ, I could save it and stop the hemorrhage. So I then took a piece of gauze which I folded in a strip, about 4 inches wide, as I do this (illustrating), wrapped it about the spleen and twisting the ends together in this wise until I was able to stop the hemorrhage as well as by holding it in my hand. I thought that if I replaced the organ now with the gauze twisted around it I might save the spleen, but I would have difficulty in removing the gauze later. So I cut the gauze in two on the opposite side from the twist and sutured the two ends together with plain catgut, leaving the free ends of the gauze coming out at the upper angle of the wound with six twists which I counted and held so by a clamp which was fastened to the dressing. This effectively stopped the hemorrhage and I let the gauze drain it from that region. I went on my vacation. The case was in the hands of an assistant and I told him to untwist the gauze six times, and I thought that after fourteen days he would be able to slip the upper and lower pieces out. The man did well, but the assistant had some little difficulty in getting the gauze. He said he had to enlarge the opening because it was adherent down at the parietal peritoneum, but was easily slipped from about the spleen, was removed in that way, and the man made a good recovery. At any rate, we saved his spleen.

The next case occurred two days after the first. This man had been injured two weeks before. This is an interesting case. He had an enormously distended abdomen. He was a colored man, though now a distinctly "pale coon." He had not much pain, but there was fluctuation everywhere. He had tenderness over the region of the spleen; he had dullness everywhere except in the upper quadrant of the abdomen. Liver dullness had disappeared, and there was tympany over the upper right quadrant of the abdomen. All else was dull. I made a left-sided incision, feeling that I had another case of rupture of the spleen, and I found in this instance the same sort of spleen, but the rent was not so severe. This spleen was adherent. The patient had had a perisplenitis, and when he received his injury by running against his fellow, the spleen had been torn loose from the parietal adhesions and a rent made in the posterior and upper aspect of this organ, more toward the periphery. There was considerable bleeding. Two weeks after the injury the spleen was still oozing, the hemorrhage having gone on gradually and persistently. It did not "put him out" as was done in the first case. I was able to loosen this spleen and sutured its capsule down, using gauze, and he has made a recovery. I think these cases are of interest to the Association because we have so little to guide us with reference to the treatment of injuries of the spleen. And in the cases that I have heard of the

spleen has been removed. I believe that if we bear this method in mind and swing the spleen up in a hammock and squeeze it, we can probably prevent some of these patients from having their spleens removed.

Dr. H. Wellington Yates, Detroit.—I have had no such cases as the writer of the paper speaks of, but have had a few cases of concealed hemorrhage, not of a splenic character, but from rupture of the liver. It is not difficult to make the diagnosis of concealed hemorrhage if they are such representative cases as Dr. Noble has just recited. But, as a rule, we do not care to have these patients go on with such enormous hemorrhages that the abdomen is filled with blood, and you can easily tell by percussion whether the abdomen is filled with blood or not before the operation is done. One of the important points in early diagnosis is a very high leucocyte count, and it will be found in every single one of these cases, whether the concealed hemorrhages be in the abdominal cavity or elsewhere, that the leucocyte count is very high, the polymorphonuclear percentage remains nearly normal. In the case of hemorrhage, plain and simple, the leucocyte count will be from 30,000 to 45,000, while in the case of pus formation in a cavity, as in a pus tube or in the appendix, we have a high leucocyte count with a high polymorphonuclear percentage.

I merely bring this out as an early diagnostic sign in cases of concealed hemorrhage in the abdomen of any form.

Dr. Lott (closing the discussion).—I want to thank the gentlemen for this very interesting discussion, and I also want to congratulate the speaker (Dr. Noble) who saved his patient by such an exceedingly clever surgical device. In my case I wanted very much to leave the spleen; I wanted to anchor it and I considered the matter very carefully, but when I likewise considered carefully the condition of the pedicle, and the condition of the organ, I felt that I was not justified in giving the patient the risk.

A GOOD WAY TO TREAT FEMORAL HERNIA.

BY

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EVERY incision for the correction of a hernia must be made with a contemplation of the proper care of the hernial contents, a preservation of the structures entering into the formation of the rings, and such reconstruction of the parts as to make a competent and lasting support.

Femoral hernia is no exception to this rule, and presents such characters and peculiar conditions as to warrant a more dignified place in our literature than it now seems to enjoy. It is always acquired, and constitutes about 10 per cent. of all cases of hernia. It is prone to strangulate, exists almost exclusively in the female, and in the natural course of events does not come to operation until some complication arises whereby the life of the patient is threatened and an operation is undertaken more to save life than to cure the condition.

This may account, in a way, for the large number of recurrences of femoral hernias as compared with inguinal. A fair estimate of recurrences in inguinal hernias is from 3 to 5 per cent., while in femoral the number is much higher, ranging from 25 to 30 per cent. Why should there be such a marked difference between the percentages of cures in these two types? It can hardly be said that the one has greater or more difficult complications than the other or that the anatomical structures entering into the reconstruction are more difficult of manipulation in the one than in the other. But whatever the reason the fact remains that a very large percentage of femoral hernias recur after operation. In the latest edition of Kocher's work, reference is made to a review of over 23,000 cases by Potts, in which failure of radical cure occurred in 28 per cent.

This high rate of failures is surprising when viewed alongside the statement of Campbell that "as a matter of experience if the hernial sac be obliterated, any of the various methods for closing the femoral ring will result in a radical cure," or with that of Ochsner who says that "the most certain method of

closing this ring consists in removing the serous membrane by removing the hernial sac to a point within the abdominal cavity and permitting the ring to close spontaneously." He further says that "all of the methods which have been devised for closing this ring are more or less harmful and tend to cause a certain number of recurrences." It would seem that there are quite a number of other operators, who are content with this simple plan of procedure. There is another class of surgeons, however, who insist on some form of closure for the canal; who believe that the peritoneum alone is not sufficient to hold up the abdominal contents even though the hernial sac has been ligated high up, who feel that the place of exit of any hernia becomes a *locus minoris resistentiæ* and therefore demands some artificial means for reconstruction. To those of the second class, the writer would submit the following procedure.

An incision 4 or 5 inches in length is made parallel with Poupart's ligament midway between this ligament and the saphenous opening. In older persons, it is best made in the sulcus formed by the thigh upon the abdomen. The subcuticular fat and areolar tissue is wiped by gauze dissection from the surface of the sac well down and into the external margin of the saphenous opening.

The skin and subjacent fat of the upper margin of the wound are then pushed upward until Poupart's ligament and the lower aspect of the fibers of the external oblique muscle are brought plainly into view. The base of the wound now contains the lower fibers of the aponeurosis of the external oblique, Poupart's ligament, the falciform process of the fascia lata, the saphenous opening, and the hernial sac.

One-half inch above Poupart's ligament and directly above the femoral canal, the fibers of the external oblique are separated, and a gridiron opening is made through the internal oblique and transversalis muscles down upon the peritoneum. The finger now separates the transversalis fascia from the peritoneum, to which it is loosely attached, the separation being carried completely around the process of peritoneum which has been pushed down through the femoral canal to form the hernial sac. This completely frees the sac from all its surrounding tissues.

The peritoneum is now opened through the gridiron incison and an opening is also made in the hernial sac. This gives definite knowledge of the conditions of the hernial contents, and makes reduction much easier. If, as is often the case, a loop of

intestine has been pushed through and has become strangulated, it will be found to be adherent by agglutination to the parietal peritoneum at the point of entrance into the canal, its hernial portion will be black, thickened and edematous, and its lumen filled with fluid exudate. Or, it may be found that a process of omentum has long been occupying the sac and has become densely adherent to it. Whatever the pathology, reduction by this means is much simplified, and it is rarely necessary to enlarge the canal. When a coil of gut is found in the sac and its viability

Fig. 1.

Fig. 2.

in doubt, it is brought through the gridiron incision following its reduction, and the freedom offered to its blood-vessels will soon determine that fact. If an exsection is necessary it is much easier and more safely performed through this opening than through an enlarged hernial canal.

After proper care has been given to the contents of the hernia, the sac is easily pulled up through the canal, tied and cut away. The removal of the sac and pulling the lower margin of the wound forward, brings into view the upper margin of the hernial canal (now empty), Gimbernat's ligament, lower border of Poupart's ligament and the iliac vein. These structures are seen to form an isosceles triangle, the lower side of which is Gimbernat's ligament, the upper Poupart's, and the base the iliac vein. One or two sutures of No. 1 chronic gut are made to include the two sides of this triangle which when tied, completely obliterate the intervening space closing the canal.

In other words, with the vein in view, the ileopectinal fascia is sutured to the lower border of Poupart's ligament, and definite knowledge is had relative to the encroachment upon the vein. A running suture of plain gut next closes the gridiron opening, and a subcuticular stitch approximates the skin.

This operation is not presented as something new, probably many others are doing much the same operation. It has been denominated "a good way to treat femoral hernia," for the following reasons:

It can be performed ordinarily inside of fifteen minutes.

It offers free and easy care of the hernial contents.

It preserves the anatomic structures in relation to the disease.

It affords such a reconstruction of the parts as to make a competent and lasting support.

For six years, the writer has followed this technic with uniformly good results.

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DISCUSSION ON THE PAPER OF DR. NOBLE.

Dr. Channing W. Barrett, Chicago.—I wish to speak briefly of the advantage of operating from the inside upon femoral hernia over that of operating externally, although I have not operated from within except when the abdomen was opened for some other purpose. In performing external operations, however, it has always been apparent that we were operating at the wrong end of the hernial canal. I have operated through a median incision and after correcting the conditions, have separated the peritoneum from the lower angle of the incision to the femoral ring and in one case opened the peritoneal sac, thereby exposing the enlarged ring. Two or three chromic-gut sutures were used to close the ring by uniting the iliopectineal fascia to Poupart's ligament. In one case necessary pelvic work was done through a median incision and through this incision the left round ligament was shortened by going intramurally to the internal ring. On the right side we not only had a femoral hernia, but an inguinal hernia as well. A rather large incision was made over the inguinal hernia and through this incision the femoral hernia was corrected and then the inguinal ring was closed, so that we did something of the same procedure that Dr. Noble has presented. In a case of adherent sac, the internal operation would have to be combined with an external incision to free the sac and this Dr. Noble's ingenious procedure provides for. My cases have not presented this difficulty.

Dr. Albert Goldspohn, Chicago.—I am very much surprised to hear the statement made that any surgeon should expect to

cure a femoral hernia by simply obliterating the sac and doing nothing for the canal. What Dr. Barrett alludes to I have done likewise in abdominal sections, when the abdominal wall was relaxed, so that the parts could be made accessible from within and the sac could be withdrawn. I have likewise operated for both inguinal and femoral hernia by one incision, and then I have operated for femoral hernia or inguinal hernia in conjunction with the extended Alexander operation. You open up the inguinal canal for shortening the round ligaments, and cure an inguinal hernia by the right kind of closure of every Alexander wound a la Bassini. In order to expose the femoral canal it is merely necessary to retract the inner angle and lower margin of the incision downward and inward.

The stump of the ligated sac can be deflected away from the hernial canal for about an inch, by passing its ligature from within outward through the muscles by means of a good-sized curved needle passed in a reverse direction, with its thick end forward. An additional opening or incision is not needed.

As to closing the canal, my method is to put the finger on the vessel sheath, holding the vein, artery and nerve out of the way, and the inner edge of Gimbernat's ligament can be brought into view, otherwise you can feel it with the finger, and then pass a curved round needle with chromic catgut through its inner edge and then into the heavy fascia which lies over the pubic bone and approximate the two, making the fascia rise laterally to meet the inner edge of Gimbernat's ligament. I have had no difficulty in doing that but if the opening was large so that I could not make this approximation, then I would go up above and bring down the edge of the conjoined tendon and unite it to the fibrous structures and periosteum covering the upper edge of the inner end of the pubic bone, and cut off the femoral canal in that way.

Dr. Walter B. Dorsett, St. Louis.—I, like Dr. Noble and others who have spoken, have operated on these hernias from within. It seems to me, this is a combined method from without as well as from within. It occurred to me, when the doctor was explaining his diagram, that there is hardly any advantage gained by making a gridiron incision. In these cases the gridiron incision makes a small opening to work through, so that if the incision is made along the median line and the same technic is easy in the reduction of these hernias from within, it would be a much better incision, in as much as we have more space in which to work. I rather think it is a hazardous procedure simply to leave the canal and allow it to close spontaneously, because the chances are the same condition will be present which caused the hernia at the beginning.

Dr. Miles F. Porter, Fort Wayne.—I think it is well for everyone of us who operates for hernias frequently to be acquainted with all of the tricks of the trade. I believe that there are certain general rules that apply to most all operations but

in regard to hernias and most other surgical conditions there is no particular operation that is always the best. Generally speaking, I think there are certain things that should be done in a successful operation for the cure of hernia, and in the order of importance they appear as follows: First, obliteration of the sac. In abdominal hernia we know where the vessels make their exit from the abdomen. In the second place, after we have finished our job, we must, if possible, try to secure prompt aseptic union. Any operative procedure which entails an undue amount of injury, and particularly an undue amount of injury to the cellular tissue will, other things being equal, render the chances of an imperfect result greater, so that any undue separation or handling of the cellular tissue, particularly in a fat woman who has such a hernia, will add an element of risk so far as concerns the ultimate cure of the hernia.

Now, you speak of closing the opening. You cannot do so. It is absolutely impossible unless you shut that vein, and if you close it too tightly your patient by and by, in the course of months, comes to you with a dilated vein, if he does not come to you in a few weeks with an edematous leg. You must leave room for the vein to come through. Another thing it is wise to avoid, particularly in fat people, and to which I have called attention on previous occasions, is the vertical rectus incision in abdominal cases. If your operative procedures are in the immediate neighborhood of large vessels, the epigastric, for instance, and you have infection, you want to remember the possible danger of a serious secondary hemorrhage as the result of the involvement of the vessel walls in the dissemination of the infection. There is another objection to an operation of this kind or a similar one when you are dealing with a strangulated hernia. The rule is that you are dealing with infective conditions inside the belly. You should get the infective organs out and make the manipulation outside the belly and not draw the infection up into the noninfective abdomen, as you would do here.

One word regarding the gridiron incision. Anatomically there is no gridiron incision to be made. There is a little difference in angle; we split the fibers, we do not make a gridiron incision. There is no such thing as crossing the fibers there at all. You split the fibers, but you do not make a grindiron incision. The principle of dealing from above and pulling the contents of the sac out has a good many times been applied to the treatment of hernia, and I would simply call attention here to some of the weak points in this and similar schemes for the treatment of these cases.

I would like to ask Dr. Noble if he has ever come in contact with the epigastric artery in doing this operation, or has he ever seen it? He has been operating in the immediate neighborhood of it where he ought to see it.

Dr. Noble.—It is not wounded.

Dr. Porter.—It has not come into the operative field.

Dr. Noble.—You may occasionally find it, but you push it aside.

Dr. Porter.—When in cellular tissue, if you can avoid manipulation or trauma in the immediate neighborhood of large vessels, you will avoid a source of probable danger, especially in very fat people. If you have much infection in these cases, and infection is very prone to occur where there is a lot of fat, one is likely to have a serious hemorrhage. As a matter of fact, I do not believe anybody has any business operating for the radical cure of femoral hernia who has 20 or 10 per cent. failures. I think he had better start his kindergarten work over again. I would feel if I had 10 per cent. of failures, that I would better ask my friend Noble to operate on these cases for me and I would get off the job.

Dr. Noble (closing the discussion).—This proceedure is not offered as a universal operation. The same measure will not make a coat for every man, and we are not trying to make a coat that will fit everybody, but as a means of meeting certain difficulties that we find in the treatment of this condition, and at the same time, curing it, I have found this operation a very satisfactory one. I believe that if some of you will remember it and do it some day, it will serve you a good turn or a good purpose.

I agree with the criticisms or objections made by Dr. Porter. I agree with him that the wider we enter into cellular tissue, fatty tissue, the more we are inviting disaster as a general rule. The more mauling and pounding we give to any of the raw tissues, the more are we at fault. This operation is easy. You do, Dr. Porter, make a gridiron incision, but not in every case. In some cases I have found the fibers are in line with those above. Again, I have found them at right angles. In making the gridiron incision we are warranted in adopting the principle because we do not injure tissue. We do not cut any nerve supply. We do not wound large vessels and do not interfere with nutrition. We do not bruise. We ought not to bruise or inflict injury upon any blood-vessel in this region. The operation offers the great advantage, and is a decided improvement, of treating the hernial content in this type of cases, as I have said, which oftentimes threatens the life of the patient. We often have to do a resection and empty the contents of the intestine as well. Both can be accomplished through this opening. The opening is sufficiently ample to deliver the intestine and empty it of the lethal dose of toxin which, if left in the gut, may carry the patient off following a very proper herniotomy.

POSTOPERATIVE ACUTE DILATATION OF THE STOMACH.

BY

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THIS is a condition, a complication, and not a disease. I have endeavored to exhaust the literature on the subject, published since the article of Loffer, appearing in the early part of 1908, in which he gives the findings or conclusions based on 217 cases reported up to that time. These recent articles are sixty-eight in number, closing with June of this year, and have been contributed by both American and European authors.

I am sorry that time would not permit me to make any personal experiments to verify the truth or prove the falsity of the claims and conclusions gathered from these observers. I sincerely trust that the title and body of this paper shall not lull the conscience of any physician to a sense of individual security in the thought that acute dilatation of the stomach alone concerns the surgeon, and is only a postoperative condition. It is not only *not* a rare condition, but it is probably quite as frequently met with by the general practitioner as by the surgeon, and it may be encountered as a complication often far more grave than the original malady, in all forms of injuries, after nervous shock of various kinds, in all acute infections, prolonged and debilitating diseases, as well as acute indigestion, and may occur at any age and without sex preference. It has been known to follow operations after all kinds of general, spinal and local anesthesia, and following operations in which the stomach had been thoroughly irrigated.

History.—Rockitansky described the condition in 1842. He thought it was due to duodenal compression by the mesenteric root. Brinton recognized it in 1859 and believed it due to paralysis.

Etiology.—Certain conditions, recognized postmortem, have been proposed as undoubted causes of this condition. So varied and contradictory or inconstant have been some of these that most authorities have been forced to the conclusion that not one

constant but many possible factors may operate and present varying degrees of importance in different cases. It is certain that paralysis of any part of the intestinal tract is promptly followed by rapid dilatation of that section, and that no demonstrable obstruction is needed at either end of the paralyzed section to prevent the accumulation of gas or fluid from escaping. It seems equally true that paralysis of the stomach and part of the duodenum will also in many cases lead to rapid dilatation of the stomach, at times even to the point of rupture, without there being any point of obstruction more than would exist from the normal power of the sphincter-like tonicity of the circular fibers of the pylorus and cardia, plus that which naturally results from the orificial displacement due to the dilatation. With the dog or cat under profound anesthesia the stomach may be distended until the respirations grow labored, heart feeble and rapid, and dissolution appears imminent; rupture of the stomach occurs or death takes place. But if either the stomach of the dog or cat is unduly distended, when narcosis is not profound, the animal relieves itself by emptying the stomach, and every experienced anesthetist has noted the tendency of a loaded stomach to empty itself under partial anesthesia, but he has also noticed that all vomiting is at once stopped when profound narcosis is attained and no vomiting can again occur until the individual has partly, at least, recovered from the anesthetic. In fact, the anesthetist can have no surer sign that his patient is passing from under the anesthetic, or that he has not been under it completely, than when there is retching or vomiting. These facts prove very conclusively, either that the stomach is paralyzed by the anesthetic, that the vomiting center is paralyzed, or that reflex inhibitory influence has resulted in muscular paresis, and this again at once paves the way for fermentive activity and gas formation from food or other gastric contents, bacterial toxic invasion of the tissues and rapid distention of the stomach which may easily get under considerable headway during a protracted operative procedure. Within a few moments or hours under favorable conditions, such a quantity of gas or fluid may accumulate in the stomach as to distend the stomach and displace all the intestines downward, while the stomach occupies the entire abdomen, interferes with the heart's action by upward pressure and may produce rapid death or grave symptoms without any real obstruction either at the cardia, pylorus, or in the upper intestinal tract.

When moderate distention of the stomach takes place the displacement may so press the root of the mesentery where it crosses the third part of the duodenum, as to completely stop all egress downward of gas or fluid so that pancreatic, duodenal and biliary secretions after distending the duodenum are poured from this overdistended organ through the pylorus into the stomach. These secretions are decidedly irritant and even corrosive to the gastric mucosa, and reinforced by the irritating properties of the anesthesia, now also being eliminated by way of the stomach, a powerful exosmosis sets in which in some cases rapidly drains all the available fluids from the body into the stomach. Regurgitation usually occurs rather than real active vomiting, for it is brought up in mouthfuls, often without effort, and without nausea in some cases, and practically always free from feculant odor. The stomach losses in this way are often much like the overdistended and paretic urinary bladder overflow and is well expressed by the term regurgitated rather than vomited. To these possible etiological factors which may act to cause acute dilatation must be added all debilitating, and toxic agents of the septic infection type as well as those of ordinary narcotic influences, among which latter the anesthetic must not be ignored. The following sequence must then present itself in cases of this class:

1. Paresis of the stomach, vomiting center or inhibition through nerve connection.
2. Dilatation.
3. Increased obstruction at the cardia and pylorus as well as through traction upon, and angulation of, the stomach orifices and compression at the duodenal mesenteric crossing.
4. Peristalsis will also be found entirely absent in nearly every case.

Mac Evitt says the stomachs of dogs can be distended to bursting during anesthesia, but not otherwise.

Fairchild says that whatever may cause paresis may cause dilatation of the stomach. He also gives the three principal causes, namely,

1. Toxic (neuro-paralytic).
2. Gastro-mesenteric ileus.
3. Peritonitis.

Symptoms.—Vomiting, usually of the regurgitant type, thirst, inordinate and uncontrollable, moderate pain in some cases, sensation of fullness in the epigastrium, temperature usually

but slightly elevated and at times normal. Inspection shows distention of the upper abdomen, slight or no evidence of peristalsis, tympany often very extensive and may in the dorsal decubitis extend over the entire abdomen with slight dulness noted only when percussion is made low laterally with the patient turned on the side. Splashing can be noted readily in some of the cases. In rapid distention grave disturbance is quickly noted in restlessness, dyspnea, rapid pulse becoming feeble and thready, urine very scant—the urine is so small in amount as to cause at times error in diagnosis under the supposition that the patient is dying from suppression, with uremia. The amount of fluid poured into the stomach and regurgitated is at times enormous and far in excess of the amount ingested. The vomited fluids are dark greenish, brown or almost black, sour smelling but not feculent, although presenting some fermentive odor. Constipation is the rule and in some cases collapse comes early and is profound.

Diagnosis.—Diagnosis is always easy to one who is on the lookout for the condition and will make careful examination of the case. Persistent vomiting of the regurgitant type especially coming on after the anesthetic nausea is past and in the absence of severe local pain, rigidity of the abdominal walls or local tenderness, especially when accompanied by marked distention of the upper abdomen, becoming general with intense thirst, great prostration, rapid pulse, often without evidence of peritonitis or marked rise of temperature and accompanied by progressively increasing dyspnea, is almost an unmistakable complexus of indications of acute dilatation of the stomach. Passing a stomach tube will at once prove or disprove the diagnosis by drawing off the accumulation of gas and fluid, following which if the stomach be washed until the fluid returns clear, relief of all the symptoms subjective and objective renders the diagnosis certain.

Pathology.—The postmortem findings are so inconstant and variable that one may say that it has no pathology except that of dilatation of the stomach. The dilatation varies from a moderate degree, extending to or beyond the umbilicus, to complete filling of the abdomen and collapsing of the other hollow viscera, or displacing the small intestines into the pelvis. Accompanying this extreme distention, there will frequently be encountered yielding of the muscular coat in different places, various changes in the mucosa and a decidedly anemic state of the

stomach as a whole. The distention of the stomach has in probably 20 per cent. of the postmortem cases extended into the duodenum to the point where the superior mesenteric artery crosses the third part of the duodenum on the anterior surface of the body of the second lumbar vertebra. This postmortem findings caused some observers to conclude that the mesenteric root crossing the duodenum was the primary cause of the obstruction and the dilatation of the stomach, when really obstruction at this point never could or would have occurred save by strong traction on the mesentery or direct pressure of the dilated stomach until the resistance to the passage of gas and fluid was greater at this point than at the pylorus. Undoubtedly stasis in both the stomach and duodenum favors bacterial invasion. All experience and experimental work proves that when any part of the intestinal tract is paralyzed, distention of the part is rapid, tissue bacterial invasion probable and angulation quickly prevents the passage of gas from the distended into the healthy part. The stomach behaves exactly the same way save that obstruction by angulation is not so complete or easy, though it is entirely sufficient in many cases at both the pylorus and cardia to prevent the passage of gas on account of the sphincter-like action of the circular muscular fibers at both orifices until the tension is so great that the pylorus yields in 20 per cent. of the cases. The cardiac orifice also permits the passage of some gas or a mouthful of dark brown or greenish fluid and at times a very large amount may be so expelled. When the dilatation succeeds in forcing the pylorus, then the gastric and pyloric contents will mingle to the point where the mesentery crosses the duodenum. The distention will not be likely to pass this line because the duodenum is normally flattened out on the anterior surface of the body of the second lumbar vertebra, the mesenteric root crossing the front of the gut with its sharp edge pressed firmly against the intestine, and held there by the new enormously distended stomach, into which is constantly being poured the outward osmotic flow from the body fluids. The fermentive changes manufacture more and more gas which in turn increases the stomach distention and the force with which the small intestines are pressed downward lower and lower into the abdomen or pelvis, pressing the root of the mesentery directly and by traction against the duodenum. The duodenum cannot yield posteriorly because of its contact with the spinal

column, besides every particle of additional distention of the stomach also increases the direct stomach pressure against this same point, making egress of gas or fluids by this route an impossibility unless the stomach can be lifted forward to relieve tension on the transverse duodenum and the root of the mesentery. It has been proven by experiment that in these cases where distention produced obstruction at the mesentery crossing, as soon as the finger was passed behind the stomach and it was lifted forward so as to remove the direct stomach pressure on the duodenum, if the mesentery was not being forcibly drawn downward, the duodenal and stomach contents rapidly drain through into the small intestines. These incontrovertible facts prove conclusively to my mind that as a primary causative and obstructive factor in acute dilatation of the stomach, the crossing of the root of the mesentery over the transverse part of the duodenum must be abandoned. How much of the pathology noted postmortem in the gastric mucosa is due to fermentation, irritation and corrosive action of the pancreatic juice entering the stomach can as yet be only conjectured. The distention is at times entirely gaseous and on passing the stomach tube gas and fluid is occasionally expelled with almost explosive force. The stomach being distended must yield at points of least resistance. The lesser curvature is short and its extremities more or less fixed by the cardia and pylorus with the resisting hepatic and diaphragmatic dome limiting displacement upward, so that as the dilatation continues the greater curvature is finally pressed against the abdominal walls at all points, while the lesser curvature is folded as it were, or more properly angulated as some observers have noted it, in the form of a "V" or "U." The folding together of the lesser curvature aids in traction upon and semiobstruction of both the cardiac and pyloric orifices. The contents of the stomach, while mostly gas, have been known at times to consist of two gallons of fluid. Liver, gall-bladder, pyloric and other adhesions as well as drainage tube or gauze pressure or drainage reflex irritation has seemed to be the principle pathology responsible for the manifestation in some cases.

Miller says "The hypersecretion from the stomach may be an effort of nature to eliminate poisons usually removed by the kidneys and liver or terminal manifestations of a grave toxemia."

Certain it is that by whatever means the bile and pancreatic juices gain access to the stomach, they at once begin an irri-

tating and even corrosive action and possibly their presence in the stomach may powerfully stimulate the osmotic flow in all cases in which the stomach is incompletely emptied by vomiting.

The fluid itself poured into the stomach from the general system may by dilution greatly lessen this irritant and corrosive action and aid in emptying the stomach by emesis or in other words be simply another instance of nature's conservative effort in prolonging fight for life while it gives to us at the same time a very important therapeutic hint in gastric lavage.

Prognosis.—The mortality has been variously estimated at from 40 to 80 per cent. There is little question but that the early diagnosis and prompt use of the best recognized treatment will give a greatly reduced mortality. The very severe cases will sometimes die within a few moments to five hours, while the less severe may linger from ten to twelve days. From whatever cause extreme dilatation of a viscus occurs, there must result more or less paresis for some time thereafter and this should forewarn us to not permit extreme redistention for fear that the paresis of distention may itself cause permanent loss of tone. This is doubly important in cases of the class under consideration where paresis undoubtedly played the most important rôle in the development of the trouble. It would therefore appear that in early emptying of the stomach and preventing its refilling there would be presented the first prognostic indication. The cases which present a high temperature from the start will give the greatest fatality because the septic intoxication which produced the pyrexia has also caused the paresis which in turn caused the acute dilatation of the stomach and the removal of the stomach contents may not be able to even slightly influence the septic process which was the primary cause. Those cases, on the other hand, which have a slight temperature rise or none until the dilatation of the stomach is very pronounced, may have had the paresis produced by a nervous shock, a blow on the epigastrium, fracture of the spine, paresis of the pneumogastric or its ganglionic center, reflex irritation from operative trauma to the solar plexus or be produced by pressure from drainage. Elimination by the stomach mucosa of ether or other toxic agents may cause or aid in causing the local manifestations, to say nothing of the almost unlimited number of debilitating causes, including indigestion from dietetic indiscretions. It will at once appear that the ability to recognize the cause and promptly to remove the same will have much

to do with determining the prognosis and also that statistics are quite misleading because of the variety of factors entering into the different cases.

Treatment.—Should consist first of prevention to the utmost of our ability, by the suitable preparation of the patient. The stomach and intestinal tract should be as free as possible from undigested food stuff which might by arrest of the digestive process, undergo fermentation or decomposition and cause considerable quantities of gas or produce toxemia. It is necessary to avoid too profound and prolonged anesthesia. The utmost care must be taken to minimize operative trauma and pressure or adhesive irritation to the solar plexus from drains used in the upper abdomen. Frequent change must be made in the patient's position to one side or the other, to facilitate the passage of gas or liquids and at the same time the danger of slight gastric distention will be reduced, thus preventing the stomach from impinging upon the mesenteric root and interfering with ready passage of gas and fluids into the jejunum and possibly cause regurgitation into the stomach. The operation must be completed in the shortest possible time to reduce to the minimum the period during which the vomiting center (safety valve function) is paralyzed by the anesthetic. Exposure of the abdominal viscera must be as slight as possible. Especially dangerous is much handling, air contact and friction of all kinds, but particularly wiping the abdominal viscera with gauze. *Avoid all contact of dry gauze* with the endothelial surface of any viscera. Use only gauze in the abdomen which is wrung fresh from hot normal salt solution and placed in contact with the abdominal viscera in the gentlest possible manner. The omentum must be used unsparingly to prevent the formation of dangerous intestinal adhesions, by securing it in contact with and to cover all dangerous surfaces but always without traction, and as a graft when necessary. The utmost care must be exercised to prevent the patient from taking too much and unsuitable food for some days after an operation, because many persons have little or no digestive power for several days after taking an anesthetic. The active therapeutic indications are immediate emptying of the stomach by the tube followed by lavage until the fluid returns clear and this must be done as soon as there is stomach distention, tympanitic or dull, with or without pain, nausea, vomiting, regurgitation of fluid or belching of gas and without waiting for the pulse to be greatly increased in frequency

and lessened in force, respiration embarrassed, cynosis to be extreme or the thirst to be of the agonizing, torturing kind. This use of the tube and lavage is to be repeated as often as there is the slightest manifestation of the return of distention in the upper abdomen before any symptoms take place, because an organ recently distended and paralyzed from whatever cause, cannot recover its tone if allowed to become redistended soon, for distention frequently repeated or even once of sufficiently severe a type, may render paralysis permanent without any other associated condition. The permanent loss of contractile power from overdistention of the urinary bladder is well known and there does not seem to be any good reason to consider the stomach an exception. The stomach tube therefore may be needed every thirty minutes to six or eight hours.

I am sure that we erred in our first case in not passing the tube several times instead of once and by allowing ourselves to be lulled to a sense of security by the slight discomfort of which the patient complained; slight distention, absence of vomiting and ease with which she expelled and eructated gas. The grave condition of these patients of itself bars out of consideration the undertaking of such operative procedures as sectioning the duodenum and reuniting it in front of the root of the mesentery (F. Byron Robinson), gastrojejunostomy, gastrotomy, etc., even though they offered any prospect of benefit more than the use of the tube, which they do not. For the condition has occurred in cases in which gastrojejunostomy had previously been done and only one case in about every five presents obstructions of any part of the duodenum. It is very doubtful if the obstruction noted in any of the 20 per cent. of cases had anything to do with the production of the condition, but the evidence is almost indisputable that in this percentage in which the obstruction was noted, it was a result of the dilatation and in no sense a cause. Hence, though these operative procedures represented no gravity, they would still be a waste of time and absurd therapeutic measures. Normal salt, hypodermoclysis or continuous drop method enemata to replace the fluids lost by the rapid osmotic outflow through the stomach, are imperative in most cases. Hypodermoclysis must be used in all cases in which there is also inability to retain enemas or in which there exists diarrhea or frequent passages of gas per rectum, as occurs in some of these cases. The terrific thirst is one of the most urgent indications for the use of hypodermoclysis or proctolysis to

relieve the starving tissues. The mechanical interferences with the heart and respiratory functions is at times very great and the stomach tube gives the only sure, safe and instantaneous relief to both. The fact that death may be almost instantaneous or occur after two weeks, only emphasizes the need of promptness and thoroughness in the use of the tube. Whether any benefit may be obtained from the use of acids, alkalies or antiseptics will depend upon the condition of the fluids drawn by the tube at the time of the lavage. About the only operative condition which could be considered justifiable under these conditions would seem to be the removal of drains, particularly those in the upper abdomen where they may cause pressure, obstruction or splanchnic reflex inhibition, or for the release of adhesive obstruction. The position treatment so insisted upon (Geo. R. Fowler), probably represents more preventative than curative influence, for when the stomach has already undergone great acute dilatation the prone position is impossible and the lateral decubitus is not able to release the defective drainage points. The value of placing patients on the side early after all operations, particularly the right side, to facilitate drainage through the pylorus, and to prevent dilatation and pressure obstruction upon the root of the mesentery, cannot be questioned and by turning our patients we will do much to lessen the irksomeness and lumbar pain of the first few postoperative days. In cases with falling temperature, artificial heat must be freely applied. After the use of the stomach tube the patient may often lie on the face comfortably and empty the stomach as it fills, without difficulty, and he should not be permitted to resume the dorsal decubitus. The Trendelenburg position would seem to favor rather than overcome reversed peristalsis and the same is true of the knee and chest position though the latter, like the prone position, is impossible with many of these cases.

The use of strychnin, heroin, eserin or other drugs should be to meet the symptomatic manifestations as they arise in each individual case and according to the judgment of the physician.

CONCLUSIONS.

First, failure of the cardiac orifice to readily yield is the one essential to acute dilatation of the stomach.

Second, motor paralysis of the stomach, whether due to cen-

tral or peripheral paresis, to inhibition through the solar plexus and splanchnic stimulation, or any narcotic or toxic agent, may cause the condition.

Third, reflex inhibitory influence is well shown by failure to produce dilatation of the stomach from ligating the duodenum alone, but to ligate the duodenum and crush the testicle in dogs promptly causes dilatation of the stomach.

Fourth, the greater frequency of the condition following surgery of the upper abdomen, in which wick and other drains are used, indicates the importance of inhibitory influences of the solar plexus, trauma and irritation.

Fifth, knowing that paralyzed bowel is obstructed bowel nd peristalsis can alone obliterate kinks due to paralysis, we should not expect the stomach to be subject to different laws.

Sixth, on whatever side of the cardia the gastric muscularis is weakest, the dilatation will be greatest, causing the cardiac opening to be pushed to the opposite side and more or less angulated against the sharp margin of the cardiac opening in the diaphragm, thus adding another factor of difficulty in emptying the stomach by vomiting.

Seventh, operative absurdity is at once indicated by the impossibility of draining a paralyzed stomach into a paralyzed gut, and a considerable part of the intestinal tract may be expected to be paralyzed in every case of acute dilatation of the stomach by the same cause which produced the gastric paresis and paved the way for dilatation.

Eighth, the permanency of acute dilatation of the stomach will depend upon the cause operating to produce the paresis and upon the degree of distention.

Ninth, acute dilatation of the stomach sometimes occurs and progresses rapidly during an operation.

Tenth, as only a few drops of ether in the stomach may cause great dilatation, it is necessary to prevent the patient from swallowing ether.

Eleventh, acute dilatation of the stomach may begin when the small intestines are very much distended with gas and not yet paretic.

Twelfth, occlusion by the root of the mesentery must be secondary else the tube and lavage would not afford relief. The need of vigilance must not be relaxed in any period of life as the condition has been encountered at nine months and at seventy-four years of age. In all cases the stomach tube must be at once

passed as it represents no danger and its early and thorough use gives almost the only hope of cure.

Thirteenth, it is so easy to detect the first manifestations of acute dilatation of the stomach by touch that I am convinced that at every visit for the first few days after an operation the surgeon should pass the hand down over the ensiform cartilage and note whether there is distention of the epigastrium and when it is detected he should pass the stomach tube at once and prevent grave complications. This precaution is especially important in abdominal cases and interns as well as nurses should be taught the importance of this sign of fullness in the epigastrium in order that danger from acute dilatation of the stomach may be at once detected and dealt with in time, even though the surgeon may not be present, because of the extreme rapidity with which it may develop into a condition of the utmost gravity.

The average age of the patients reported in this list is thirty-seven years, the oldest being seventy-one and the youngest two and one-half. The report includes the work of forty-two operators, eight cases being the greatest number reported by one operator. The two cases reported by the author were encountered within the last year. The sex was given in eighty-five of these cases, with twenty-six males and fifty-nine females. The anesthetic used is mentioned forty-one times and in the following number: Ether, twenty-seven; chloroform, seven; scopolamin-morphin-ether, two; ether and chloroform, two; hyosin-morphin-chloroform, one; nitrous oxide, one; gas and oxygen, one. This includes nine gastroenterostomies and twelve appendectomies. The justifiability of undertaking to cure acute dilatation of the stomach by gastroenterostomy and the obstructive influence of the root of the mesentery as a causative factor in producing acute dilatation of the stomach is nevertheless emphatically denied because in every case the gastrointestinal anastomosis was made beyond the mesenteric root crossing of the duodenum. The operative time is given in only twenty-two these cases and it slightly exceeds one hour.

It would be interesting to know what was the operative time on many of these other cases because of its undoubted influence in the production of acute dilatation of the stomach. In twenty-two cases the symptoms of acute dilatation of the stomach were manifested within twenty-four hours after operation, in forty-one the first symptoms appeared from the fourth to the sixth day and in one case the onset was delayed to the

sixth week. In cases so long delayed in their onset as six weeks, one must always look for a cause, as dietic error, nearer in time to the manifestation than that of the operation.

In this list there were sixty-one recoveries and thirty-nine deaths, or a mortality of thirty-nine per cent. In sixty-seven of these cases the stomach tube was used, usually accompanied by lavage. Of the sixty-seven thus treated, there were forty-seven recoveries and twenty deaths, or a mortality of a little over 29 per cent. If we exclude from this last list, eight cases in which the acute dilatation was complicated, in some by general peritonitis, septicemia, erysipelas (the latter given as the cause of death in one case) and one case in which the operator admitted the probability that acute dilatation of the stomach existed at the time of operation, the mortality of those cases of uncomplicated acute dilatation treated by the passage of the stomach tube, is reduced to less than 18 per cent.

We have reason to believe that this mortality will be still farther reduced when the diagnosis is made earlier and the stomach tube and lavage are persistently and intelligently used.

The eleven cases reported by Boice, Littig, Osborne and Ruth, have not been previously reported or published.

Three of the reported cases should have been excluded as not strictly deserving a place in an article on postoperative acute dilatation of the stomach, but I have allowed them to remain because they contained important suggestions or data. Hendon mentions having had three other cases which he did not report. These would bring the entire number up to 100, after excluding the three cases not properly belonging in this series. Hendon's unreported cases, however, would still further reduce the per centage of mortality because all three of his unreported cases recovered.

CASE REPORTS ON ACUTE DILATATION OF STOMACH.

Name of operator	Age of patient	Sex	Anesthetic	Operation	Time of operation	When symptoms appeared	Treatment	Results and remarks
(1) Axhausen.....	41	Male....	.....	Posterior gastrojejunostomy.	.....	11th day.....	Four days later (15th day) relaparotomy was done and the adhesive obstruction which was present was removed. The distal contracted intestine at once filled.	Recovery prompt and complete. Gained 5 lb. in 3 weeks.
(2) Axhausen.....	41	Male....	.....	Gastroenterostomy ...	.....	11th day.....	Five days later (16th day) relaparotomy was done. Found a tubercular stenosis of duodenum. Excision of stenosed portion of gut was done.	Convalescence disturbed for 10 days following operation by local peritonitis. Condition cleared up with recovery.
(3) Barker.....	40	Female..	.....	Posterior gastrojejunostomy for duodenal ulcer.	.....	1st day.....	Stomach tube every 3 to 5 hours—12 quarts of liquid and much gas removed in 16 hours—Prone position used.	Improvement for 5 days. Death on 18th day, due to peritonitis.
(4) Barker.....	40	Female..	.....	Appendectomy; posterior gastrojejunostomy.	.....	10th day.....	Repeated lavage.....	Died on 17th day.
(5) Blain.....	57	Female..	Ether....	Exploratory laparotomy.	.....	3d day.....	Stomach tube passed 14 times in 24 hours.	Recovery in 15 days.
(6) Blain.....	29	Male....	Ether...	Appendectomy.....	30 min .	2d day.....	Lavage of stomach done 11 times.	Recovery in 15 days.
(7) Blain.....	.....	Male....	.....	Appendectomy.....	.....	3d day.....	Lavage was repeated several times.	Prompt recovery.
(8) Blain.....	.....	.....	.....	Epidural tumor of the lumbar cord.	.....	6th week.....	Tube and lavage used for 10 days.	Recovery.
(9) Blain.....	34	Female	Ether ..	Salpingectomy.....	.....	3d day.....	Stomach tube drew 2 quarts of bile-colored fluid.	Recovery without further trouble.

CASE REPORTS ON ACUTE DILATATION OF STOMACH.—CONTINUED.

Name of operator	Age of patient	Sex	Anesthetic	Operation	Time of operation	When symptoms appeared	Treatment	Results and remarks
(10) Blain.....	.....	Female..	.....	Inversion of the appendix; and ovariotomy.	.....	6th day.....	Tube drew 2 quarts of brown fluid.	Died on 13th day.
(11) Blain.....	.....	Female..	.....	Ovariotomy for cyst..	.....	3d day.....	Lavage repeated 3 times....	Recovery in 12 days.
(12) Blain.....	28	Female..	.....	Alexander operation on the round ligaments.	.....	5th day.....	Lavage was done 5th and 6th days.	Recovery.
(13) Boice (C. A.)*	58	Female..	Ether ..	Abdominal hysterectomy.	100 min.	3d day.....	Lavage gave immediate relief.	Death in 18 hours from onset of symptoms—no autopsy.
(14) Boyd.....	.....	Female..	.....	Induced abortion for pernicious vomiting.	.....	6 hours.....	.....	Died in 10 hours.
(15) Boyd.....	.....	Female..	.....	Perinephritic abscess.	.....	2d day.....	.....	Died in 24 hours.
(16) Boyd.....	25	Male alcoholic	Chloroform.	Inguinal adenitis....	.....	3 hours.....	Tube was passed the 3d day..	Died. (Diagnosis was made only a few moments before death—at which time stomach tube was passed.)
(17) Boyd.....	2 1/2	Female..	.....	Ill two days with regurgitant vomiting.	.....	.....	Repeated lavage.....	Death occurred on 8th day.
(18) Boyd.....	38	Male.....	Chloroform.	Cut in a brawl	.....	17 hours.....	.....	Died in 48 hours. Stomach was distended with fluid and gas. Pyloric kink present.
(19) Callender.....	.....	Female..	Ether ..	Salpingooophorectomy.	45 min ..	36 hours.....	Repeated lavage.....	Death occurred. Post-mortem findings showed a general peritonitis and extensive adhesions to the stomach. Pulse attained a rapidity of 160 within 36 hours.

CASE REPORTS ON ACUTE DILATATION OF STOMACH.—CONTINUED.

Name of operator	Age of patient	Sex	Anesthetic	Operation	Time of operation	When symptoms appeared	Treatment	Results and remarks
(20) Callender.....	.....	Female..	.....	Ventral suspension...	.....	8 hours.....	Repeated lavage. Patient placed in lateral and prone position.	Died 8 days later from erysipelas.
(21) Callender.....	.....	Female..	Ether ..	Hysterectomy for fibroid.	.....	2d day.....	.....	Died 4th day. Stomach reached 6 inches below the umbilicus. No peritonitis. Pulse 4 before death.
(22) Chavannaz...	49	Male.....	.....	Posterior gastro-enterostomy.	43 min..	Vomiting 2d day dilatation 4th day.	Frequent lavage—hypodermoclysis.	Recovery—gained 7 kilos at end of 6 months.
(23) Chavannaz...	49	Male....	Chloroform.	(?) performed 6 1/2 months after above operation.	.....	2d day.....	Lavage.....	Recovery.
(24) Cown††.....	26	Female..	.....	Appendectomy.....	.....	3d day.....	Stomach tube used 3d day—much gas and liquid expelled.	Recovery.
(25) Delageniere....	42	Male.....	Chloroform.	Laparotomy for ruptured intestine—drainage at 2 points.	.....	Vomiting 2d day marked dilatation 3d day.	Lavage removed large amount of liquid—repeated every 3 hours. Ventral position 3 days. Hypodermoclysis.	Recovery in 20 days.
(26) Delageniere....	62	Male....	.....	Herniotomy.....	.....	Enormous dilatation in 24 hours.	Lavage; intestinal lavage; genupectoral position; ventral position gave immediate relief; hypodermoclysis.	Recovery in one month.
(27) Delageniere....	25	Male....	.....	Appendectomy and nephropexy.	.....	Vomiting 2d and 3d day.	Purgation; lavage used.....	Death on 4th day. Autopsy showed enormous dilatation of stomach—no peritonitis.

CASE REPORTS ON ACUTE DILATATION OF STOMACH.—CONTINUED

Name of operator	Age of patient	Sex	Anesthetic	Operation	Time of operation.	When symptoms appeared	Treatment	Results and remarks
(28) Eskridge.....	32	Female..	Scopolamin, morphin, and ether.	Appendectomy; dermoid cyst removed.	60 min..	48 hours. Temp. 100, pulse 120.	Lavage repeated every 3 1/2 hours.	Recovery.
(29) Eskridge.....	.....	Female	Scopolamine, morphine, and ether.	Appendectomy and ovariotomy.	.....	30 hours. Pulse 118.	Repeated lavage.....	Died on 4th day.
(30) Fairchild....	.....	Female.	.....	Ovariotomy.....	.....	7th day. Temp. 102. Pulse 124.	Stomach tube and lavage gave immediate relief.	Recovery.
(31) Friedmann reports case—(Bannerberg, operator).	22	Male.....	Ether and chloroform.	Appendicitis.....	.....	.....	Lavage.....	Death one week later—no autopsy.
(32) Grandin.....	.....	Female..	.....	Total hysterectomy....	60 min..	12 hrs. with tympany.	Tube drew a quart of dark fluid every 2 hrs. (Patient had taken only a few ounces of fluid.)	Recovery.
(33) Grandin.....	42	Female..	.....	Supravaginal hysterectomy for fibroid and pregnancy.	60 min..	24 hrs. with tympany (sort of bubbling).	Tube drew 2 quarts of fluid lavage every 2 hrs.	Died in 30 hrs.
(34) Hellendall....	35	Female..	Chloroform.	Laparotomy for pyosalpinx.	.....	Evening of 4th day. Pulse 140. Green vomit on 5th day. Profuse vomiting on 6th day.	Transfusion for collapse.....	(Parotitis and abdominal abscess as complications on 15th day.) Recovery.

CASE REPORTS ON ACUTE DILATATION OF STOMACH.—CONTINUED.

Name of operator	Age of patient	Sex	Anesthetic	Operation	Time of operation	When symptoms appeared	Treatment	Results and remarks
(35) Hendon.....	.....	Female..	.....	Appendectomy and lifting of the uterus.	.....	Pulse rapid and weak on third night.	Stomach tube drew off brownish fluid. Lavage twice daily for 5 or 6 days.	Complete recovery.
(36) Hendon†.....	37	Female..	.....	Cholecystotomy with tubal drainage.	.....	Apparently moribund in 48 hrs.	Tube drew several gallons of brackish fluid—second passage of tube drew off about 1/2 amount as obtained at former time.	Recovery prompt and complete.
(37) Heperline...	47	Female..	.....	Fibroma.....	.....	About 12 hrs. nauseated. Pulse 120.	Tube drew off dark green fluid; lavage every 3 hrs. for first day.	Prompt recovery.
(38) Heperline....	43	Male.....	.....	Strangulated hernia..	.....	Vomiting in 12 hrs. Pulse 120. Acid fluid.	Lavage reduced pulse to 96; repeated every 3 hrs.	Recovery.
(39) Heperline ...	.....	Female..	.....	Double pyosalpinx...	.....	Copious vomiting of dark green fluid in 24 hrs. Temp. 98 1/2. Pulse 120.	Stomach tube passed twice..	Death in 15 hrs. from onset of dilatation. Vomitus was acid and irritated the face and hand.
(40) Hopkins.....	69	Female..	.....	.....	.....	.....	.....	Died on 2nd day. Patient was subject of chronic bronchitis—had slight pain; no fever; vomitus was greenish but without fetid odor. Autopsy showed dilatation of stomach and duodenum to crossing of the superior mesenteric artery.

CASE REPORTS ON ACUTE DILATATION OF STOMACH.—CONTINUED.

Name of operator	Age of patient	Sex	Anesthetic	Operation	Time of operation	When symptoms appeared	Treatment	Results and remarks
(41) Hopkins.....	60	Male.....	.....	Partial resection of stomach for carcinoma.	.....	2nd day. Temp. 100. Pulse 160. Resp. 26.	Enema secured expulsion of gas and gave some relief. Digitalin gr. 1/50, strychnin gr. 1/30, adrenalin 1/100; calomel; stomach lavage.	Died on 8th day after operation; autopsy showed stomach suture line united well, but enormous distension of stomach to mesenteric crossing. No peritonitis.
(42) Hopkins.....	10	Male.....	.....	Appendectomy without drain—internal operation.	20 min..	15 hrs. Temp. 99. Pulse 140. Resp. 30.	Saline infusion per rectum. Morphin gr. 1/6, atropin gr. 1/150 (hypo). Stomach tube passed. Prone position.	Recovery.
(43) Hoskins.....	60	Male.....	.....	Partial resection of stomach.	.....	2nd. day. Temp. 100. Pulse 160.	Digitalis and calomel were given.	Death occurred in 12 hrs. Autopsy showed enormous dilatation of stomach with presence of greenish fluid. Dilatation of duodenum to crossing of mesenteric root.
(44) Hoskins.....	10	Male.....	Ether...	Appendcetomy.....	20 min.	15 hours. Temp. 99. Pulse 120. (Rose to 140).	Second day lavage was used; patient turned on face; foot of bed elevated.	Recovery.
(45) Landahl.....	13	Male.....	.....	.....	.....	.....	Lavage.....	Patient was bicycle riding until 8 P. M. On following morning temperature was 37.5° C., pulse 140, thirsty stomach acutely dilated. Died in 10 hours.
(46) Lanphear††..	39	Male....	Hyosein, morphin and chloroform	Posterior gastrojejunostomy.	.....	.....	Wound was open throughout on 13th day from redilatation of stomach. Under full anesthesia the extruded intestines were replaced in abdominal cavity and the wound freshened and sutured.	Recovery. Discharged in 24 days. Original operation was performed to relieve dilatation of stomach due to cicatrix from old duodenal ulcer.

CASE REPORTS ON ACUTE DILATATION OF STOMACH.—CONTINUED.

Name of operator	Age of patient	Sex	Anesthetic	Operation	Time of operation	When symptoms appeared	Treatment	Results and remarks
(47) Lee.....	45	.....	.....	Appendectomy.....	.....	2 hrs.....	Tube used with repeated lavage.	Recovery.
(48) Lee.....	43	.....	.....	Ventral hernia.....	.....	6 hrs. accompanied by vomiting.	Stomach tube and repeated lavage.	Recovery.
(49) Lee.....	.....	.....	.....	Removal of gall-stones.	.....	9 hours accompanied by severe pain.	Stomach tube and lavage...	Died in 52 hrs.
(50) Littig (L.W.)*	30	Female..	Ether...	Appendectomy (No pus but septic case in house at time).	.....	48 hrs. Temp. 105.	Reopened abdomen on 4th day. Withdrew fluid and gas in large amounts. Gas expelled through tube with explosive force—lavage used.	Died on 7th day.
(51) Littig (L. W.)*	17	Female..	.....	Appendectomy (infection in house).	.....	48 hrs. Temp. 105.	Repeated lavage — patient cried for tube.	Died on 10th day.
(52) MacEvitt....	25	Female..	.....	Obstetric.....	.....	1 hr. after delivery. Temp. 103.6. Pulse 132.	.....	Died on 9th day—no autopsy, but paracentesis of stomach removed gas and distention.
(53) MacEvitt....	29	Female..	.....	Appendectomy. Hysterectomy.	.....	2nd day worse to 4th day.	Relaparotomy (as diagnosis of obstruction was made but true condition being found stomach tube was used). Lavage.	Recovery.
(54) MacEvitt....	.....	Female..	.....	Tuboovarian abscess and pelvic peritonitis.	.....	50 hours.....	Removed fluid from stomach; tube and lavage used — patient placed on side.	Intestines rose out of pelvis—stomach regained normal size and position. Recover.

CASE REPORTS ON ACUTE DILATATION OF STOMACH.—CONTINUED.

Name of operator	Age of patient	Sex	Anesthetic	Operation	Time of operation	When symptoms appeared	Treatment	Results and remarks
(55) McMonagle...	34	.....	Ether ..	.....	.....	.....	.....	Case was an alcoholic. There was no obstruction. Died after 2 days of almost continuous regurgitation. Stomach was filled with gas and 2 gallons of fluid filled, almost the entire abdomen extending to pubes.
(56) McMonagle...	20	.....	Ether...	Appendectomy. General peritonitis.	.....	4th day.....	Stomach lavage.....	Recovery.
(57) McMonagle...	45	Female..	Ether...	Hysterectomy.....	.....	8th day.....	Stomach lavage. HCl was given as washings were alkaline.	Recovery.
(58) McMonagle...	53	Female..	Ether	Hysterectomy.....	.....	7th day great thirst.	.....	Died 4th day. Enormous distention of stomach. No obstruction; organs healthy.
(59) McMonagle...	.....	Female..	Ether...	Hysterectomy.....	.....	5th day.....	Stomach lavage on 10th day.	Died 10th day. Enormous distention of stomach—infection of stump. General peritonitis. No obstruction.
(60) McMonagle...	.....	.....	Ether...	Removal of gallstones and gall-bladder.	.....	10th day.....	Relaparotomy and removal of gas and fluid by trocar. Stomach was washed in 8 hours and fluid was clear.	Recovery.
(61) McWilliams..	35	Female..	Nitrous oxid.	Appendectomy and myomectomy.	45 min.	3rd day. Temp. 103. Pulse 150.	Frequent use of stomach tube and lavage.	Recovery.
(62) Miller.....	27	Female..	.....	Salpingooophorectomy.	.....	24 hrs. Pulse 165.	Drew off dark liquid with tube 3 times—patient placed on side.	Recovery. Gauze drain was used in vaginal vault.

CASE REPORTS ON ACUTE DILATATION OF STOMACH.—CONTINUED.

Name of operator	Age of patient	Sex	Anesthetic	Operation	Time of operation	When symptoms appeared	Treatment	Results and remarks
(63) (Osborn (J. W.)*	27	Female..	Ether...	Supravaginal hysterectomy.	90 min.	48 hrs. Temp. 101. Pulse 120.	Gastric lavage used once at end of 60 hrs. Strychnin sulp. gr. 1/30 (hypo) every 3 hours for 3 days. Starvation for 48 hrs., then liquid diet.	Recovery.
(64) Osborn (J. W.)*	54	Male.....	Ether...	Appendectomy (with drainage).	35 min.	Nausea in 40 hrs. Vomited for next 48 hrs. at times then dilatation.	Lavage at end of 90 hrs.—repeated every 3 hrs. for 24 hrs.—then 4 to 6 hrs. for following 24 hrs. Strychnin, whiskey (man was alcoholic).	Recovery.
(65) Osborn (J. W.)*	55	Female..	Ether...	Ventral hernia.....	120 min.	24 hrs. Temp. 100. Pulse 98.	Enema followed by lavage at end of 33 hrs. Enema every 3 hrs—strychnin gr. 1/30 (hypo) every 3 hrs. for 12 days.	Recovery.
(66) Osborn (J. W.)*	25	Female .	Ether..	Supravaginal hysterectomy.	95 min.	Some dilatation at beginning of operation. Great dilatation in 36 hrs. Temp. 100.2. Pulse 120.	Lavage—repeated in 4 hrs. Strychnin (hypo) for a week.	Recovery.
(67) Osborn (J. W.)*	40	Female..	Ether...	Supravaginal hysterectomy.	120 min.	48 hrs. Temp. 100.6. Pulse 140.	Refused gastric lavage. Starvation—strychnin (hypo) every 3 hrs.	Death at end 90 hrs.
(68) Osborn (J. W.)*	18	Male....	Ether...	Appendical abscess...	20 min.	Probably some dilatation at time of operation. Vomited at end of 36 hrs. Temp. 101.2. Pulse 142.	Gastric lavage—normal. Salt per rectum—strynin (hypo).	Died at end of 53 hrs. At end of emesis tempt. was 100.4 F. Pulse 124.

CASE REPORTS ON ACUTE DILATATION OF STOMACH.—CONTINUED.

Name of operator	Age of patient	Sex	Anesthetic	Operation	Time of operation	When symptoms appeared	Treatment	Results and remarks
(69) Pilcher.....	71	Female..	Gas and oxygen.	Amputation of leg....	.....	24 hrs.....	Lavage every 8 to 10 hrs. Right-sided position.	Recovery.
(70) Pilcher.....	54	Female..	.....	Appendectomy and hepatopexy.	.....	Nausea and belching in 36 hrs. Regurgitation.	Stomach lavage twice daily until 6th day. Right-sided position.	Recovery.
(71) Rodgers.....	42	Female..	Ether...	Salpingooophorectomy.	.....	13 hrs. Temp. 105. Pulse 150.	.....	Died on 5th day. No pain; enormous amount vomited. Conscious and comfortable to the end.
(72) Root.....	41	Female..	.....	Salpingooophorectomy.	30 min.	30 hrs.....	Placed on right side; later on face because symptoms returned when on back.	Recovery.
(73) Ruth (C. E.)*.	24	Female..	Ether...	Double salpingectomy suppurative (fetid).	60 min.	24 hrs. Temp. 103. Pulse 120 to 150.	Lavage; not repeated.....	Died in 24 hrs. Temperature previous to operation was 103.
(74) Ruth (C. E.)*.	54	Female..	Ether...	Intestinal obstruction from old operation adhesions.	110 min.	2d day with constant hiccough. Temp. 100. Pulse 146.	Stomach tube and lavage drew 1/2 gallon of dark brown liquid and much gas. Latter escaped with almost explosive force—in all 12 lavages were given. Hypodermoclysis used 5 times.	Recovery. No fecal odor to washings until 9th day. This washing showed many colon bacilli.
(75) Sherwood....	4	Male....	.....	Appendectomy (gangrenous).	.....	2d day.....	Lavage every 4 hrs. continued to 12th day.	Recovery.
(76) Sherwood....	9	.....	.....	Appendectomy (gangrenous).	.....	Projectile vomiting after 10th day.	Lavage at regular intervals. Strychnine gr. 1/90 (hypo) every 3 hours.	Recovery tedious but satisfactory.

CASE REPORTS ON ACUTE DILATATION OF STOMACH.—CONTINUED.

Name of operator	Age of patient	Sex	Anesthetic	Operation	Time of operation	When symptoms appeared	Treatment	Results and remarks
(77) Smith.....	.....	Female..	.....	Double Salpingo-oophorectomy (drainage).	.....	36th hr.....	Lavage.....	Recovery.
(78) Smith.....	.....	.....	.....	Posterior gastroenterostomy.	.....	36th hr.....	Repeated lavage.....	Recovery.
(79) Smith.....	.....	.....	.....	Cholecystotomy (drainage).	.....	36th hr.....	Lavage repeated three times.	Recovery. No return of symptoms after removal of drain.
(80) Smith.....	.....	.....	.....	Appendectomy.....	.....	20th hr.....	Lavage once.....	Recovery.
(81) Smith.....	.....	.....	.....	Appendectomy (drainage).	.....	66th hour.....	(Not mentioned.).....	Recovery.
(82) Smith.....	.....	.....	.....	Salpingectomy.....	90 min .	36th hour.....	Lavage used twice.....	Recovery.
(83) Smith.....	.....	.....	.....	Appendectomy.....	.....	4 days.....	Lavage.....	Recovery.
(84) Sommarin....	15	Female..	Chloroform and ether.	Acute dilatation of stomach with pendulous pyloris and cardia.	.....	.....	Stomach was punctured and gas evacuated with 2 liters of fluid. No. HCl; slight lactic acid. Fistula made according to Nitzel without fixation of catheter to abdominal wall. Foot of bed raised. NaCl solution per rectum; morphine; no food for 6 days.	Recovery. Tube removed 25th day; fistula closed 28th day; two months later bismuth shadow gram showed stomach still reaching below the umbilicus. No particular discomfort.
(85) Thorn.....	32	Female..	.....	Myofibroma removed.	.....	24 hrs. vomiting and regurgitation.	Tube not used. Chloral 2 drams. Potassium bromide 4 drams, Tinc. digitalis 1 c.c. per rectum.	Recovery.
(86) Thorn.....	32	Female..	.....	Ovariotomy and appendectomy.	.....	Eructation of gas in 6 hours	(Not mentioned.) Tube not used.	Died in 66 hours.

CASE REPORTS ON ACUTE DILATATION OF STOMACH.—CONTINUED.

Name of operator	Age of patient	Sex	Anesthetic	Operation	Time of operation	When symptoms appeared	Treatment	Results and remarks
(87) Thorn.....	35	Female..	.....	Ovariotomy.....	.....	Eructation and vomiting in 3 hrs. with pain.	Repeated lavage.....	Died 5th day.
(88) Tissier.....	49	Female..	Chloroform.	.....	.....	Few hours.....	Lavage gave prompt relief. As many as 5 lavages were given daily for a week.	Recovery. Vomiting which appeared early was at first thought to be due to anesthetic.
(89) Tissier.....	45	Male....	.....	.....	.....	.....	.....	Death in 15 hrs.
(90) Tissier.....	42	Female..	.....	Hysterectomy.....	.....	2d day (P. M.) Temp. 37° C.	Ether and oil of camphor....	Died 3d day (A. M.).
(91) Tobert.....	10	Male....	Ether...	Abdominal section....	30 min.	3d day.....	Tube and lavage.....	Recovery.
(92) Tobert reports case. (Groves operator)	43	Female..	Ether...	Supravaginal hysterectomy and appendectomy.	.....	.....	Tube was passed.....	Recovery. During operation stomach was found reaching almost to pubes.
(93) Tobert.....	.....	Female..	Ether...	Cesarean section.....	.....	During operation.	Lavage was done during operation—and after operation—patient placed on side. Repeated proctolysis.	Recovery.
(94) Toma.....	34	Female..	Ether...	Ovariotomy and hematocele.	75 min.	3d day, temp. 98°, pulse 120.	Repeated lavage.....	Recovery.
(95) Torrence....	22	Female..	.....	Gastrojejunostomy....	.....	2d day.....	Lavage of stomach for 3 successive days.	Recovery in 1 month.
(96) Van der Voordt.	17	Female..	.....	Nephropaxy.....	.....	.....	.....	52 hrs. after operation patient seemed out of danger. Died at end of 75th hr. Postmortem measurement of stomach showed greater curvature 60 cm.

CASE REPORTS ON ACUTE DILATATION OF STOMACH.—CONTINUED.

Name of operator	Age of patient	Sex	Anesthetic	Operation	Time of operation	When symptoms appeared	Treatment	Results and remarks
(97) Van der Voordt.	24	Female..	Chloroform.	Hematocele, laparotomy.	.....	6th day vomiting. Temp. 36.6° C. Pulse 120, 8th day vomiting incessant.	Trendelenburg position, subcutaneous injections of camphor.	Recovery in 22 days.
(98) Wilkinson....	43	Male....	.....	Appendicial abscess..	.....	4th day frequent vomiting of green fluid.	Patient expired when turned on right side. 5 pints of dark green fluid expelled at this time.	Death on 5th day.
(99) Witherspoon.	32	Male....	.....	Posterior no-loop gastroenterostomy for dilatation of stomach with vomiting of coffee-ground looking material (blood in stools).	.....	.....	.....	Death. Postmortem showed stomach greatly dilated but anastomosis healed and well open.
(100) Witherspoon	39	Male....	.....	Appendectomy (blood in stools).	.....	.....	.....	Death in 12 days. There was suppression of urine 3 days before death, also marked dilatation.

* Cases not previously reported. † Hendon says that he has had three other cases which he did not report because they were simply repetitions of the others and therefore a waste of time.

†† The bibliography of the Cown and Lanphear case reports has been misplaced and therefore I am not able to present them in the regular list.

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EXTRAUTERINE PREGNANCY. OPERATION THREE MONTHS AFTER TERM. RECOVERY.

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THE terminology of the subject indicated by the title of my paper is not altogether satisfactory. The terms "extrauterine pregnancy," "tubal pregnancy" and "ectopic gestation" are frequently used interchangeably and synonymously, in apparent forgetfulness of the fact that a pregnancy may be extrauterine without being tubal, and tubal without being extrauterine; not to mention the comparatively rare instances of anomalies in the development of the pelvic organs, in the presence of which conception now and then occurs, and to which none of the designations referred to could be properly applied.

Up to 1883, when Lawson Tait first operated for ruptured tubal pregnancy, the condition was chiefly interesting as a post-mortem study and from a pathologic point of view, but since that time it has attained the proportions of an eminent and urgent practical problem. An incalculable amount of investigation has been and is still being conducted in the effort to elaborate methods for its early recognition and to establish something like a uniform and satisfactory basis for its treatment. Moreover, it was in former times generally regarded as one of the rarest affections, so rare indeed that it was said that those in charge of large maternities might never see a case. In Hart and Barbour's Manual of Gynecology (1883) Bandl is quoted as saying, that out of 60,000 gynecological and obstetrical cases received in seven years at two large clinics in Vienna, there were but five cases of extrauterine gestation.

At the present day, the condition is far more frequently encountered than such statements would indicate. For instance, Dr. Charles P. Noble, a native of this State, who is now in charge of the Kensington Hospital for Women in Philadelphia, says that from 3 to 4 per cent. of all his laparotomies are performed for it and Dr. Howard A. Kelly's experience is practically the same.

The vastly increased frequency in the incidence of abnormal pregnancies is, however, in some degree misleading, because there

can be no doubt that the comparatively crude methods of diagnosis and the infrequency with which the peritoneal cavity was opened three decades ago, permitted many cases to escape recognition. Notwithstanding this fact, it is more than likely that there is in reality a greater prevalence of this condition, and for several reasons, not the least of which is the unfortunate moral and physical degeneration, particularly among the poor in large centers of population.

In the attempt to explain the etiology of extrauterine gestation, many ingenious assumptions and theories have been advanced, all of them bearing a greater or less degree of apparent plausibility. Knowing the function of the Fallopian tubes and the generally accepted dicta as to the mechanism of their action, it is easy to conceive of numerous and various conditions which in the abstract should offer an impassable mechanical barrier to the passage of the ovum from its place of origin to the uterus. Accordingly, one of the oldest theories was based upon the real or fancied effect of peritoneal adhesions which, by compressing the lumen of the tube or by interfering with its normal peristaltic action, would arrest the ovum at some point in its journey. In the same way, the coincidence of intra- and extratubal tumors with the pregnant tube has added these growths to the category of probable mechanical causes. I need only mention in this connection the occasional citation of congenital stenosis, puerperal atrophy and persistence of the fetal type of tube, each of which conditions has been brought forward in an etiologic rôle. The existence of an antecedent salpingitis in so large a number of cases of tubal pregnancy has undoubtedly furnished the most interesting, engaging and attractive argument concerning the way in which it is produced. Up to recent times, it has been almost universally believed that fertilization of the ovum normally took place in the uterine cavity because of the disposition and action of the ciliated cells of the uterine and tubal mucosa, the former producing a current that was directed upward in the uterus and the latter a current that was directed downward in the tubes. On account of this arrangement, the spermatozoa could easily reach the fundus of the uterus, but could go no further by reason of the opposing action of the tubal cilia. Therefore, if the cilia of the tube had been incapacitated or destroyed in consequence of an attack of endosalpingitis, this obstacle would be removed while the normal downward propulsion of the ovum would be made difficult or impossible. What a beautiful theory,

and yet how fallacious are the arguments which are based upon it! For instance, it has been satisfactorily shown that the ciliary current is continuous and unbroken from the fimbria of the tubes to the internal os and that, therefore, the upward movement of the spermatozoa is "opposed" from the time of their entrance into the uterus. Moreover, animal experimentation as well as observations upon human beings have established the fact that spermatozoa are present in the ampulla of the tubes a few hours after sexual intercourse. Hence, we must abandon the old teaching, notwithstanding the attractive guise in which it appealed to us, and accept, as a demonstrable fact, the statement that normal conception occurs in the place which I have mentioned or even upon the surface of the ovary. Every pregnancy, then, is primarily extrauterine, and in the future we shall not have to ransack our intellectual resources in search of an acceptable explanation for the occasional "fortuitous" or "accidental" meeting of ova and spermatozoa in the Fallopian tube, but shall be confronted with the manifestly more difficult problem of determining why the fecundated ovum ever develops in any other place. Still further evidence of the untenability of the old theory of Tait has been furnished by careful and competent observers as a result of microscopic study of pregnant tubes. Dr. J Whitridge Williams tells us that in nearly every specimen examined by him he was able to demonstrate the presence of cilia.

Notwithstanding the explosion of this old explanatory hypothesis, the fact remains that there is some etiologic relation between salpingitis and extrauterine gestation, for in the great majority of cases there is a history of previous pelvic inflammation which is repeatedly confirmed by the histologic study of specimens removed at operation. Just what this relation is, has not been satisfactorily determined, so that the net result of all the speculation and study concerning ectopic pregnancy is that we do not know its cause.

Of similarly striking interest is the great change in the attitude of the profession as to the results or terminations of tubal pregnancies. It was formerly believed that their universal fate was rupture, either into the peritoneal cavity or between the folds of the broad ligament. It is now known that the great majority terminate in the early part of the pregnancy by abortion through the abdominal ostium of the tube, while in rare instances, neither rupture nor abortion takes place but the case goes on to full

development. It seems, indeed, that abortion is the natural and almost inevitable result of the ordinary ampullar pregnancy, while in the less common isthmic variety, where the tubal lumen is so small, rupture is far more likely to occur. In my case, I feel sure that the ovum had been implanted in the outer portion of the tube and that abortion would certainly have taken place if the abdominal ostium had been permeable. What did occur, was rupture with escape of the fetus into the peritoneal cavity, the placenta retaining its attachment to the tuboovarian sac, thus permitting fetal development to reach full term.

The fate of the embryo or fetus in ruptured and unruptured cases is of great interest as well as practical importance. There can be no doubt that small embryos, when expelled into the peritoneal cavity, are promptly absorbed, unless the placenta retains a firm attachment to the tube. It is equally certain that they are sometimes absorbed while still within the tube. These facts have been repeatedly demonstrated by the examination of specimens obtained at operation. After the third month, however, absorption does not take place, and we must note the changes which it is likely to undergo, whether still in the gestation sac or lying free in the abdominal cavity. These changes are usually designated as mummification, calcification and suppuration. The mummified fetus is one in which the fluid portions and internal organs have been absorbed, leaving the skeleton, whose bones are held together by the shriveled skin. In calcification, as the name implies, there is a deposit of calcareous material in the fetus or its membranes, giving rise to the so-called "stone fetus" or lithopedion. Suppuration occurs in all forms of abnormal pregnancy in which the dead fetus remains within the mother, but is particularly liable to ensue in the extraperitoneal or broad ligament form, on account of the close proximity of the rectum and the consequent easy access of intestinal bacteria. Lithopedion formation is regarded as the most favorable of these changes, since the calcified fetus may be carried for many years as an inocuous foreign body, causing no difficulty except a possible mechanical interference with the progress of subsequent labors. One of the most remarkable cases of this kind was that of the seventy-four-years-old woman, who had carried a stone fetus within her for forty-eight years and from whom the specimen was obtained at Leinzell in 1720. In the meantime she had given birth to several children.

I need not remind this audience that the diagnosis of early

unruptured cases of tubal gestation is, in the vast majority of instances, impracticable if not impossible. Theoretically, one would say that the discovery of a unilateral tubal tumor in a patient presenting the ordinary subjective symptoms and physical signs of early pregnancy, especially if she has been sterile for several years, should be sufficient; but operative experience has taught us that diagnoses based upon these criteria are usually incorrect. Moreover, it is to be borne in mind that there is nothing distinctive or peculiar in the symptomatology of the early cases, so that there is no reason why the patient should consult a physician and thus give him an opportunity to make an examination. Therefore, both patient and physician are entirely ignorant of the existence of any extraordinary condition until suddenly disillusioned by the symptoms which indicate that rupture or abortion has taken place. Indeed, in many instances, the patient herself does not believe that she is pregnant, and numerous cases have been reported in which fatal rupture occurred before a menstrual period had been missed. Striking emphasis has thus been laid upon the fact that suppression of the menses does not regularly occur in extrauterine gestation and is of little value as the basis for a diagnosis. To this observation additional interest is attached when we reflect that if the fetus dies at an early period there is commonly a greater or less amount of uterine hemorrhage which is readily mistaken for the menstrual flow or an early abortion, the presence of shreds of uterine decidua making the mimicry of the latter condition apparently complete. As a matter of fact, in ordinary experience, the first indication of the existence of an abnormal pregnancy is the sudden onset of sharp pain in the iliac region, followed by marked pallor and faintness of the patient, who passes into a condition of collapse and frequently presents a subnormal temperature. Such events indicate rupture of the tube with the escape of blood into the peritoneal cavity, or, if the symptoms of collapse are not so pronounced, a tubal abortion has probably taken place and the blood is trickling through the Fallopian tube. If the patient does not die from the effects of rupture and hemorrhage, and the placenta has not been separated from its attachment, a secondary abnormal pregnancy follows and the fetus continues to develop. The usual symptoms of pregnancy will persist, but the patient will suffer a great deal more pain and, as might naturally be supposed, will feel the fetal movements more acutely than in normal pregnancy. The pain is undoubtedly due to the dis-

tention and contractions of the fetal sac and also to the stretching of adhesions which form between it and the adjacent organs. In abdominal pregnancies, thus brought about, spurious labor sets in at term, accompanied by distinct contractions, which apparently take place in the uterus itself, although a certain amount of pain is probably due to definite contractions of the fetal sac. This false labor lasts for an indefinite time—it may be hours or days—and the death of the fetus soon follows, after which the placental circulation gradually ceases and the amniotic fluid is absorbed, leaving the abdomen distinctly smaller.

The recognition of advanced extrauterine pregnancies is usually made after full term has been reached and is based upon the sequence of events referred to, which, when taken with the results of a physical examination, make a characteristic picture, that leaves no room for doubt.

Enlightened medical opinion is practically unanimous in regard to the treatment of unruptured extrauterine pregnancy, and the propriety and importance of immediate operation is universally recognized. Unfortunately, however, our diagnostic art has not yet become so refined as to place a problem before us so easy of solution, except in very rare instances, since the diagnosis is not and cannot be made until rupture or abortion has occurred. In the year of my graduation (1883), Lawson Tait is said to have been the first to do a laparotomy for the rupture of a pregnant tube, and the surprising ease with which he executed it and the equally surprising results which followed, caused all gynecologic surgeons to follow his example, and the record of thousands of lives which have been saved by this procedure constitutes one of the brightest chapters in the history of surgery. The treatment of ectopic pregnancy of less than four months' duration may be thus dismissed.

In the later months, the treatment depends somewhat upon the condition and location of the fetus. It may be living and enclosed in a tubal or ovarian sac, or it may be situated between the folds of the broad ligament; but ordinarily we have to deal with cases similar to mine—secondary abdominal pregnancies—the fetus and its membranes being in the peritoneal cavity, and the placenta either within the tube or broadly implanted upon its outer portion and the pelvic floor. In any case, advanced ectopic pregnancies with a living child are always a serious menace to the pregnant woman, chiefly on account of the great danger of sudden hemorrhage, so that real conservatism in such

cases lies in prompt surgical intervention. Such intervention usually implies the removal of the entire fetal sac, which in the relatively infrequent cases of unruptured tubal or ovarian pregnancies may be a simple and safe procedure. Unluckily, the fetal sac may be extensively and firmly adherent to adjacent organs and still more unfortunately the placental attachment may cover a broad area. In the extraperitoneal pregnancies, where the growing ovum spreads apart the folds of the broad ligament, the difficulties of successful enucleation increase with time, and in many instances the uterus must be removed along with the fetal sac by methods similar to those in use for intra-ligamentous fibroid tumors. There can be no doubt that abdominal section for these cases, taken as a group, is the most dangerous of operative procedures, despite the fact that improvements in technic have made it less dreaded now than it was in former times.

On the contrary, when the child is dead, the chief danger—that of hemorrhage from the placental site—rapidly disappears, and, after about six weeks, no anxiety need be felt as to hemorrhage from that source. However, to defer operation for too long a period is to invite the dangers of infection of the fetal sac from the intestines. As is shown from the history of the case which I am about to read, operation was performed about three months after false labor with the happiest results. The record is as follows:

Mrs H. A., age thirty-four, of Somerset County, Maryland, was admitted to the Hospital, October 21, 1911, and operated upon the same day. She has been married seven years and had one child five years old. Delivery was spontaneous and puerperium uncomplicated. Her last menstrual period was in October, 1910. She claims to have first noticed fetal movements the following February and these movements continued until June. Early in July, according to her physician, spurious labor pains came on and the cervix was somewhat dilated. These pains, however, subsided in a few hours and she has been comparatively comfortable ever since, having attended and taken an active part in a "picnic" during the week of her arrival in Baltimore. Since the false labor referred to, her abdominal swelling has noticeably subsided. In the earlier part of her pregnancy she bled slightly on several occasions and at irregular intervals. Has not been sick during the past year, except in July, as stated.

Examination without anesthesia disclosed a rather firm and elongated cervix crowded forward toward the pubic arch. With the vaginal finger in the posterior fornix, a large, boggy, and semielastic mass, extending well back in the sacral hollow, could be easily made out. This mass seemed intimately connected with the cervix, while from its lower anterior surface projected a mass corresponding in shape and size to the unime pregnated uterus. Colostrum could be expressed from the nipples. Under anesthesia, the above findings were confirmed and, in addition, a firm, irregular, freely movable mass could be felt in the epigastric region, suggestive of a pediculated, subperitoneal fibroid. More careful examination, however, seemed to indicate the shape and symmetry of fetal limbs. At operation, an incision 7 inches long was made, extending 1 1/2 inches above the umbilicus. The first thing noticed on opening the peritoneal cavity was the presence of free fluid. On retracting the edges of the incision, the knee of the fetus was observed projecting toward its upper angle. Its size, shape and location suggested for an instant a displaced and distended gall-bladder, but on grasping it and pulling gently, the real condition was quickly recognized. The fetus was extracted, breech first, and some force was necessary to dislodge the head from the under border of the liver. Here it had evidently lain for a considerable time, for it was distinctly flattened, presumably by the respiratory movements forcing the liver down upon it. Its buttocks, back and shoulders were snugly covered by the omentum, which, for the most part, could be easily stripped off, but which was tied and cut in several places. It was apparently enveloped by the closely adherent amniotic sac. The umbilical cord was ligated and cut and its placental end was traced directly through ovarian tissue, which, with the enormously dilated outer portion of the Fallopian tube, made up the sac containing the placenta. All the ovarian substance was thus disposed, since no portion could be found elsewhere. The sac, as large as a child's head, was tightly distended and found to contain the placenta and coagulated blood. It lay immediately behind the uterus to which it was firmly adherent, as well as to the rectum and the small intestines. The ovarian ligament led directly into the sac wall. The appendix was also glued to its posterior surface and was removed. In trying to detach the sac and save the uterus, the latter organ was torn and considerable hemorrhage resulted. This fact, and the unfavorable conditions for reuniting and

suturing the uterine rent, led me to decide upon the removal of that organ. On the right side of the pelvis there was a hydrosalpinx as large or larger than my thumb. A drain was inserted in the lower angle of the incision and the patient made an uneventful and satisfactory recovery.

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THE PROS AND CONS OF SPECIALISM.

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THE following note appears as a preface to the annual report of the proceedings of our society: "The association does not hold itself responsible for the views enunciated in the papers and discussions published in this volume." That a necessity for such a statement exists should be a source of chagrin to every member of this body. Particularly is this so if we recall how often in our discussions we refer to the general practitioner with a rising inflection, or with positive disparagement if the referred case happens to have become complicated because of the lack of appreciation of early symptoms.

Specialists invariably consider it imperative that the family physician should be familiar with the symptoms in obscure cases, read them correctly and act accordingly; in fact, as specialists we suggest that the general practitioner should know everything concerning a referred case except how to treat it, though we do little or nothing to inform or help him by our teachings.

I would preface what I shall say by stating that in favor of specialism there is everything good to be said, and against it there is absolutely nothing. And, further, it should be understood that any remarks I may make do not apply to the scientific man who is doing research work, who often gives up the best part, if not all, of his life with little thought of monetary remuneration.

Specialism has become a necessity with the great American people; they demand the best skill obtainable. Unfortunately, their judgment is often at fault, which results frequently in a censure for specialism. This is well illustrated by the universal opinion of the medico-legal expert. People generally believe that their number, and the side they take, is only governed by the fee. This is an unfortunate view of our profession. The trouble is not with specialism, but with the specialist.

It is not intended to suggest, however, that the field of specialism is in any way narrowed by the action of any particular specialist.

Specialists fall into two classes: First, those men who are naturally great, and are specialists because they cannot help it. They would be great in any line. They are exceptional in their work, and are specialists because their colleagues, great and small, demand their services in anxious cases. Second is the class of men of average ability or less, who are specialists because they say they are. They are clever enough to recognize that the field of specialism is lucrative. It is quite usual for these individuals to go abroad for a few months, and on their return declare themselves specialists, sending out cards announcing their self-declared ability to the general practitioners in their locality. At the first opportunity they seek to impress the general practitioner with the seriousness of his attempting to care for cases which may come to him in their particular line of work.

So much for the etiology of the specialist; the habitat of the first class is only here and there; that of the latter is everywhere.

My judgment is that if a standard were established and a special degree required by state enactment, it would prove a benefit to the specialist, the general practitioner and the public. The public assumes that the specialist is superior in qualifications to the general practitioner, when, as a matter of fact, he is practising under the same degree and authority, and need not necessarily be more competent; though because he assumes and announces himself a specialist, he is permitted to exact a fee many times larger than the general practitioner. Further, if a standard were established, the specialist would really be on a higher plane as he should be, for in many instances commercialism seems to be the objective point rather than scientific attainment. Years ago it was essential for one to be in general practice before taking up special work; now, however, it seems to be from the cradle to the specialist.

Standardizing specialism would largely eliminate incompetent men; it would relieve and stimulate the scientific research men; it would protect the general practitioner, and would put in their proper place those men who make the fee their chief consideration.

Specialists believe it quite proper for them to watch and wait for the development of symptoms in atypical cases; but they do not concede this privilege to the family physician. Is it because they fear, if the privilege were granted to the general practitioner, that it might deplete their clientèle? Or because they fear that with a little knowledge the general practitioner

might be a menace to the public through not recognizing his limitations? If the latter view is held, it is unworthy of them, for the general practitioner in isolated districts is often a hero and is forced to exhibit skill, genius and judgment that would put many a specialist to shame. We should remember that the general practitioner is obliged to meet cases under all conditions; many times he must act quite alone; he is beyond the reach of a consultant of any type, much less a specialist; and it should be our endeavor to assist him in every way possible by our scientific work. How could we do it better than by making our proceedings an authority which he could follow, with the certainty of knowing that at least he is up to date in his work?

In a little book entitled "Being Done Good," the author describes a man afflicted with rheumatism who goes from one specialist to another, from one resort to another, and tries all kinds of treatment without betterment; and in the end the patient is made to say that "undoubtedly there is a great deal of knowledge marketed by the medical profession before it is ripe," and in this I concur.

How well does the specialist do his work? I hesitate to judge. One class, as you will admit, has called forth a great deal of discussion; I refer to the young surgeon who attacks all regions, regardless of his experience, with apparently little realization of his limitations. He has not learned that the price of surgical skill is human life, and that nature exactingly demands her toll.

Worse than these men, however, in my judgment, is the great surgeon who removes a growth in a spectacular manner in the shortest possible time, after which the patient is wheeled over into a corner of the room where his assistant works indefinitely to repair the trauma inflicted in a few moments by the specialist. Thank God, gentlemen, it is becoming the custom for the man who opens a belly to close it.

A few personal experiences may serve to emphasize how specialists, both authors and teachers, occasionally conduct their work.

At a recent state medical meeting, the President of the society, an eminent gynecologist, reported a case of panhysterectomy; it was an elective case. It came out in the discussion that the patient had the grippè, with pulmonary manifestations, at the time of the operation. I asked the operator if he advised giving an anesthetic in such conditions; he promptly replied "No" he did not, but stated further that if he had not operated some-

one else would, as the patient was anxious for the operation, and he could not afford to take the chance of losing the fee.

I had a case of epithelioma of the lip, and I advised excision of the growth as the proper treatment. The patient rather objected to the knife, and wanted caustic paste used. I advised him that that was not the best thing to do and pursuaded him to consult one of my old teachers. Instead of standing for his teachings, however, the consultant promptly acquiesced to the patient's request, entirely disregarding my suggestions, and used the caustic paste instead of the knife. And when the patient was leaving, the astute consultant and specialist said "Let me see you again, my good man, in about a week." The result was of course that I lost a patient and a fee, besides having my judgment discredited.

Some time ago while in New York at one of the very large clinics, I saw an operator do an appendectomy. He simply ligated the appendix and dropped it back into the cavity, closing the incision. I inquired if that were the usual procedure, and was informed that it was. I then asked the number of fecal fistula resulting from this method, and was told it was about 2 per cent. In reply to the query "What excuse do you make to yourself for this result," the operator said "We are so busy, and have so much of this work to do, that we cannot take the time to fuss as many do with these cases." Here was a great man, exposing the patient to possible danger, and why? Admittedly because he would not give the proper time to this work, and yet he was unwilling to divide his services with another. And so I conclude it will go in his field indefinitely, for specialists seldom die and never resign.

Very recently I sent a specimen to the laboratory that its character might be determined. I was told that the patient had a malignant condition from which he could not recover. I did not concur because of the clinical history, and wrote the laboratory to that effect. They then modified their report, saying that while they believed it was a cancerous growth, it might not be; that growths from the bladder were often benign, and I had better watch the condition for a while before telling the patient.

When the drop method of administering ether was becoming appreciated it was most interesting to watch this procedure in our very best clinics. Gentlemen, the imitation was so bad, it was a joke; yet the operator talked in favor of the drop method,

and supposed his anesthetist was using the drop method, when in reality he was *pouring* the ether on the mask.

Not long ago a young man, a professor and author, was invited to read before our county society. The subject designated was "The proper care of the more common diseases of the eye." Do you suppose he directed us how or when to use ice, dry or wet heat, leeches, or mydriatics, or how to treat a single simple disease of the eye? If you do imagine so, he did not; though he did tell us that there was a very serious condition called glaucoma, in which atropine was very injurious. But instead of telling us how to detect intraocular pressure and the value of eserine in this condition, he concluded his paper by stating that it was very difficult for the general practitioner to differentiate diseases of the eye, and, to be perfectly safe, the sooner we had our eye cases in the hands of a specialist the better it would be for the patient.

Very recently I sent a man to a noted rectal specialist in New York for an operation. His good wife accompanied him. In the course of the visit she inadvertently said that she had chronic appendicitis, and that Dr. Moriarta was going to operate when she returned home. The accomplished specialist knew his business better than he did regional anatomy; he apparently concluded that the rectal region extended to the appendix, for he succeeded in persuading her to allow him to remove hers.

About the same time I sent another patient to a specialist. I was in doubt concerning some cecum symptoms, as to whether they demanded surgery or not. The consultant was an eminent neurologist, a teacher and author. He also was in doubt and called in his surgeon to help diagnose the case, and my patient returned to me minus her appendix. I did not so much mind the appendix being gone, but I was sore about losing the fee. Suppose my methods, as a general surgeon in a small country village, were along such lines as these, what do you think would be the outcome? I will tell you; I would either be out of business or in jail.

In closing I will say I do not ever expect to *see* specialism standardized. But I would bespeak for the family physician the consideration of all organized bodies of specialists, to the extent that they make their proceedings authoritative and so useful. This could best be done in my opinion by extracting, condensing and presenting them in such a way that the views and conclusions on the scientific subjects treated might be

readily available. Such information would be of far greater value than most of you think. This would of course take a great deal of time and cost money; but it would be an added reason for our existence as a society. If economy need to be considered, let each author adstract his own paper, formulate his points or conclusions, and submit them to a committee from the society for approval, before it could become a part of the yearly report.

I would like very much to see this done, for we could then eliminate the very objectionable note, whose appearance as a preface to our reports called forth this paper. If one or both of these objects is ever gained, I shall not regret having taken up your time to-day.

THE ALPHA AND OMEGA OF THE DIGESTIVE TRACT IN THE NEW-BORN CHILD.

BY

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According to my first intention, a scientific paper was written embodying studies of the mouth and anus of the new-born child. When completed it became merely a mass of measurements, statistics, opinions and unwieldy facts. It would not do at all. The whole might interest an embryologist, a pediatrist or a dentist, but the obstetrician would be compelled to dig for and apply his findings. Consequently I have selected points of particular, practical importance to the obstetrician, have discarded the rest, have embodied the result in a sketchy, suggestive article, and now call attention to matters upon which the treatises have little or nothing to say. Books labelled "Obstetrics" abound, they give explicit directions about making certain that the child's respiration is good and free, and in this they are commendable. But what is the accoucheur to do next? Here they afford a hiatus, and this question I will try to answer. Our whole duty to a child means more than normal breathing. It means that measures should be instituted to keep breathing normal. It signifies more than fitting a child to suckle, it indicates the institution of procedures that will maintain the ability to nurse for as long a period of time as may be desirable. It includes the delivery of a healthy child and the preservation of its health. If this be not attainable one can at least aim at it, and must do so if he is to assert truthfully that he has done his best.

Two well-known malformations are "hare lip," with or without cleft palate, and "Tongue tie." Hare lip is never mesial but always (uni- or bi-) lateral. And when any malformation of the tongue is apparent then a malformation of the lower jaw should be sought for since both structures have a common origin known as the first pair of branchial arches. The same may be said of ankyloglossia or any adhesion between tongue and gums.

If the tie or adhesion interferes with the act of sucking,

then the physician snips but not otherwise. A wider and modern view of this matter is that the movable tongue is provided in order that one of its employments shall be giving form to the mouth, the nose and the face. Compare it to a potter's hand and its work upon the inside of a vase which he is shaping, or to a mason's trowel fashioning the interior of a room or building. Pressure, resistance and counterpressure are forces of great efficiency in the development of children. Atmospheric pressure upon the outside of the human body must be counterbalanced by internal atmospheric counterpressure and all pressures, in this instance, must be smooth, even and elastic, free from bubbles or vacuum. Hence, it follows that a properly-shaped mouth should indicate a proper balance, internal and external, and should ensure a nose, a throat, a chest, an abdomen, a respiration, a circulation and a nutrition all working, growing, and exhibiting phenomena along the lines which we call natural law. But a badly-shaped mouth entails a badly-shaped nostril, a bent spine, a dented sternum, more or less displacement of abdominal structures and interference with respiration and nutrition. If the mouth and its second story (nose) cause an irregular intake of air, the emission of that air is necessarily also irregular. If the inlet of any pump is choked, then must the delivery be diminished proportionately. Therefore, no tie or adhesion of the tongue is trivial in its influence on the future health of the child: consequently examination and division should be the steps which lead to and from discovery.

Digital examination of the pharyngeal vault reveals a sort of net work (trabeculæ) easily differentiated from soft (adenoid) lymphoid masses in the spaces of its meshes. Sometimes the so-called "telephone wires" and other adhesions may be felt, varying in size from a thread to a closer and larger adhesion between two surfaces; these should be broken up but the adenoids should not be interfered with unless they are thought to be overgrown and sufficiently large to threaten to obstruct breathing. Proportion in size, to the rest of the nasopharynx, is the best guide as to the necessity of crushing them gently with the finger tip. The velum palati must always hang free or be liberated. Massage usually fills all indications for radical treatment. The tactus eruditus, which the obstetrician has usually acquired to a far higher degree than the average throat specialist, makes his finger both investigator and soldier. Clinical experience only is lacking, solely because the matter has not been called to his

attention. No doubt from now to future days the accoucheur will introduce his finger into the mouth of the neonatus and as a routine measure feel the frenum, estimate the freedom of the tongue, of the velum palati and pharyngeal vault. In short, he will (or should) make certain that the ventilation of the mouth, nose and pharynx is good, because bad ventilation is a chief cause of adenoids (lymphoid overgrowths) and their evil sequellæ. Atmospheric pressure is one force that keeps vessels, circulation and tissues of the nasopharynx normal in consistency and position, and this it cannot do if a vacuum is made at the spot where pressure should be obtained. A safe rule to adopt is, the baby should sleep with its mouth closed, if it does not then find out the reason for its departure from the rule.

If the nose is plugged with mucus, then it must be freed. Many of the maladies affecting people in adult life might (or so I think) have been averted by the careful use of a little cotton swab, made with a tooth-pick (say) and used to clean an infant's nose. This and keeping the child's mouth empty and shut will cause the cultivation of adenoid hypertrophies to become less usual. There is plenty of evidence justifying the commonplace idea that adenoids may bring about the bending of maxillary and facial bones but the matter should not be allowed to rest at a sort of half-way station. Removal of the adenoids will fail as a remedial measure quite as frequently as the adenoids will disappear without any treatment save placing the teeth and palatal arch in proper position. Furthermore, the adenoids will start another growth, after the removal of the original overgrowth, if the nasopharyngeal ventilation is bad. The affair is a vicious circle. The question of priority is equivalent to the unanswerable conundrum of "which came first, the hen or the egg?" This vicious circle begins anywhere but should have begun nowhere. It occurred to me that perhaps a side light on lymphoids of the pharyngeal vault as primary and constant causes might be obtained from a consideration of evolution and embryology. The results might be roughly stated as: 1. Jelly-fish before man; 2. abdomen before thorax; 3. liver before lung; 4. alimentary tract precedes respiratory tract; 5. germs of teeth (first set), seventh week; 6. union of hard palate, ninth week; 7. germs of permanent teeth, fifth month; 8. lymphatic glands, fifth month, and tonsil fourth month. Both sets of teeth are present in the gums at birth. If we are to draw any conclusion from the above it is that the influence of the teeth goes back to the seventh week

and that of the adenoid to the fourth month of life. More than that I cannot say except that I have evidence backed by able opinions that the vicious circle is this, lymphoids cause malocclusion, nasal obstruction, etc., and malocclusion, nasal obstruction, etc., cause lymphoids to overgrow.

Few people, even physicians, have any conception of the power of the tongue and this organ must rest against the roof of the mouth. Therefore, its powerful moulding action is spoiled when resistance is lost by the mouth being opened either by having pacifiers or fingers thrust into it or for purposes of respiration. Dr. Bogue the orthodontist (*J. A. M. A.*, July 13, 1907) says, "I undertook to prevent a lad of ten years of age from placing his tongue over a tooth that I wished to examine. Three fingers and my thumb holding a mouth mirror were unable to control its movements. Anyone may protrude his tongue, hold it resistant and push against its side with a finger or two and obtain a clear object lesson as to the strength of the tongue in proportion to its size and its lack of the rigid bony supports (the phalanges) which are such great advantages to the push of the fingers.

Since keeping the mouth shut is the only possible condition under which the tongue may perform one important part of its duties it is surely evident that keeping the nose clean and free is a very much more important precaution than it is generally considered. Mechanical cleansing is often sufficient; if not, then dip the swab in cod liver oil. Should this not suffice use a saturated solution of perborate of soda. Soak the swab in this, clean the nose throughly with it, and follow the cleansing by instilling five drops of cod liver oil, with a medicine dropper, in each nostril. Gleason's formula of iodin gr. v., pot. iod. gr. xv., weakened by water, 4 ounces, may be used for swabbing. Ordinary watery solutions, such as normal salt, used in an atomizer or douche can only be condemned, as their use in the case of a new-born infant is a sure forerunner of damage, trouble and disappointment. At least my experience has been such that I always mentally picture the nose as a pyramid without a bottom or a cup or a wash bowl upside down. Anything in fact that does not hold water, and that nature never intended for an aqueduct.

Anyone who has learned to pass a cotton wound probe through his own nose will scarcely be bothered by passing it through an infant's nose, particularly as a comparison will often demonstrate

that, allowing for the difference in size, the infant's nose is the better shaped and consequently the more easily penetrated one of the two. The idea on which I wish to place emphasis is that the obstetrician has a finely educated touch; let him use his finger to examine the child's mouth, to crush adenoids, to separate adhesions and to free the velum palati. Let him remove the constraint of a tongue tie and insist that the nose be kept clean. Then as a matter of routine, let him make a digital exploration of the omega of the digestive tract, *i.e.*, the anus and rectum. Let him vaseline (lubricate) his finger, dilate and massage the sphincter and tear away any semilunar obstructive bands, which that finger discovers. Should he do this, the children under his care will have a better chance for future good health, they will look and appear better and become bigger and stronger than neglected ones. The results in my hands are exactly those which might be anticipated when a child is started in life and started right.

At present most obstetricians leave matters "to nature" so far as the future of the child is conceened. Think of the consequences of this leaving to nature. The microbe must receive more care from Nature than the child, since Nature has guarded (I wish I could say safeguarded) the latter by placing it under the protection of parents. These in turn seek the skill and training of the obstetrician as an additional protection. He must understand and know that Nature has a scheme by which she prepares plants for the animal's food, but that scheme includes with equal force that the dead bodies of animals shall nourish plants for future generations of animals. The natural impulses and influences that work on a child are bad because they are not corrected by intelligence and experience. That is why the average child desires to eat pink matches when left to Nature and would do so were it not safeguarded by parental intelligence and vigilance. Nature furnishes an animal with a bite and an evacuation. The obstetrician can make sure that both bite and evacuation are good by commencing the care of the mouth and the anus at birth. With a poor bite and poor evacuation the child's body will soon go to fertilize the earth from whence it came. In the civilized state, not leaving things to nature, but interfering with the natural by artificial but carefully regulated diet may prolong life, but even here some proverb such as "the stomach has no teeth" holds good until gastric ulcer or cancer conclude the struggle for existence.

SUMMARY.

The obstetrician may institute measures to give a child a good mouth and good anus.

Without either or both of these the animal economy and mechanism must perish, prematurely.

The deleterious influence upon bodily health of mixed cultures found in the mouth, call it rheumatism if you like, and the able seconding for evil of the colon bacillus, are not made worse by steps which may easily be taken by the obstetrician having for his objects the rendering of a mouth normal and self cleansing, and putting the anus in the best possible condition for free drainage.

I have discussed this matter with many men who are studying the subject and all agree that the steps suggested would certainly tend to improve health and prolong life, but I think it stands to reason that such accidents as depend upon poor or dim hearing for a cause may also be averted, because the commonest causes of deafness are forestalled. It may seem that I take too much for granted. This may be so, but the embarrassing question has been what to leave out, consequently I feel that my statements are very conservative indeed and I should be most happy to discuss any matter which may seem vague. Details, statistics, measurements and all the essentials of a strictly scientific paper would require a review of several sciences and the only course open to me is simply to assert and leave the "How do you know" elements to be substantiated by the physiologist, the orthodontist and the embryologist and their findings to be confirmed by the bactériologist, as they will be, have been and are confirmed according to letters, writings and statements in my possession.

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HYSTERECTOMY FOR THE CURE OF PROLAPSUS OF UTERUS.[1]

BY
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It has happened so frequently that plastic operations upon the vagina, perineum and the suspensory ligaments of the uterus have been unsatisfactory in the final results, that we believe that a more radical operation is required and we are convinced that supravaginal hysterectomy is indicated in many cases of prolapsus uteri.

Having a patient fifty years of age, past the menopause, the uterus always down within the vaginal tube and when assuming the erect position presenting outside of the vagina, the organ hypertrophied in many instances as large as a good-sized Duchess Pear or a Politzer ear distending bag, can we promise to overcome the procidentia by the use of a distending vaginal pessary or by an operation for removing the superfluous vaginal tissues or by closing the ruptured sphincter muscles of the rectum and vagina? The experience of expert operators is that even with the Dudley, Watkins or Baldy technic we fail to make these patients comfortable. If the uterus be suspended or fixed into the anterior abdominal wall, the heavy weight of the organ dragging upon these structures will place the patient in a most uncomfortable condition besides interfering with the functions of the bladder and intestines.

If a woman has passed the child-bearing period, the uterus no longer possesses a function, the ligaments and natural supports have become so changed that they have lost the power to support and maintain the organ in a normal anatomical position. The enlarged uterus is crowding the adjacent organs and on account of the increased size is pressing and compressing arteries, veins, nerves and lymphatic channels, the circulation is disturbed and various nervous reflexes are developed which are felt throughout the entire body. The patient is nervous, hysterical and distant organs are affected by the disease located in the pelvis.

The patient probably expects to have a pessary placed or an operation suggested for the repair of a lacerated perineum which

she is aware of having existed for many years. When the gynecologist informs her that the abdomen must be opened in order to shorten the ligaments supporting the uterus or to carry out an anterior fixation operation, the patient is liable to become alarmed at the prospect and insist upon a trial of the plastic operation.

Should the gynecologist go further and suggest a complete or partial removal of the uterus, the anxiety and alarm of the patient is increased, for it is difficult to convince the public of the necessity for the removal of a useless and disturbing organ. The horticulturist will remove the decayed and useless limbs when their presence is affecting the vitality and symmetry of an otherwise healthy tree. Why should not a uterus be removed which no longer possesses a function; which by its presence is a disturbing organ reflecting its baneful influence over the entire body, and which cannot be maintained in position by other operations?

At the present time in skilful hands there should not be any greater mortality than that which attends the Dudley, Watkins, Hirst or Bandler operations. In those cases of procidentia in which we have large urethrocele, cystocele and rectocele, besides a lacerated perineum, in the various degrees of destruction, we should, after the patient has recovered from the effects of the hysterectomy, perform a second operation to repair these conditions. It is useless to remove the uterus and allow the redundant vaginal tissue to remain. The patient will be uncomfortable as long as the lacerated perineum remains unrepaired.

Because a woman is from fifty-five to sixty years of age is no reason why she should be left with a procidentia uteri for the remaining years of her life. I have operated upon patients over seventy years of age with most successful results. The general practitioner too frequently decides that no operation is justified after the menopause, as he takes the view that the genital organs undergo atrophy after this period and nature will accomplish all that is required. He will probably insert a pessary to prevent the uterus sinking down into the vagina. Some go so far as to suggest the wearing of the barbarous cup pessaries with a stem to which are fastened rubber cords attached to a belt placed around the waist.

I wish to impress upon the rural practitioner the necessity of referring his cases of procidentia uteri to the specialist. Experience and capability of skilful operative technic of the highest

order is required to cure these cases. Simple operations to repair a lacerated perineum, or shorten relaxed vaginal walls do not avail in this class of cases. The enlarged uterus must be held up by fixation, which frequently leaves the patient in a most uncomfortable condition or the organ must be removed by an abdominal operation. I do not favor the vaginal route and if the appendages are in a normal condition I leave them behind. The technic of the operation is important. Where it is possible the divided broad ligaments should be sewn together over the neck of the uterus, which should be left behind whenever possible. The supravaginal operation is always indicated although there are cases in which we are compelled to remove the entire organ on account of the hypertrophied condition of the cervix.

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PROPERITONEAL HERNIA.

BY

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While the condition known as properitoneal hernia is one that is but rarely met with, still the recognition of this class of hernia is of such importance that a consideration of the subject should receive proper attention in the field of abdominal surgery. Of great importance is the early diagnosis of this condition, so that by surgical treatment a satisfactory cure may be established. Unfortunately, however, most cases are seen in the stages when grave symptoms of bowel obstruction are present, and the patient's chances of recovery are, therefore, greatly lessened.

By properitoneal hernia, we wish to designate that type of interparietal hernia in which the hernial sac is situated immediately external to the peritoneal lining, and the sac therefore usually occupies a position which is intraabdominal in character. In the simple properitoneal hernia, which is comparatively rare, there may be no external evidence of tumor.

Frequently the sac of an interparietal hernia is bilocular in character, and in these cases both compartments have a common orifice which opens into the abdominal cavity. The inner compartment lies between the peritoneum and the transversalis muscle or fascia and is therefore properitoneal in character, while the outer occupies either the inguinal or the femoral canal. It is possible also for the outer compartment to occupy a position between any of the layers of the abdominal wall. An analysis of the interparietal hernias shows that many are bilocular, and Coley, agreeing with Moynihan, is inclined to group them under one class, namely, bilocular hernias, though it seems more distinctive to designate the hernias according to their anatomic location. The bilocular forms are in reality compound hernias, each loculus or portion of sac having its special coverings or anatomical relations. The properitoneal hernia on account of its concealed position is of especial importance, and the following case reports may serve to emphasize certain points relative to diagnosis and treatment.

CASE I.—The patient was a colored man forty years of age, who took sick suddenly with pains near the right inguinal region. On the day following the attack of illness, the symptoms persisting, the patient began to vomit, the vomitus later becoming fecal in character. He was admitted to the hospital on the fifth day of his illness, May 9, 1905, with a diagnosis of appendicitis.

When he entered the hospital his abdomen was distended and tympanitic, and his features bore a pinched and anxious expression indicating serious abdominal trouble. His temperature was 100° F., respirations 24, pulse 104, and he was vomiting fecal matter. It was evident that he was suffering with a widespread peritonitis, and from the history and symptoms, this was probably caused by bowel obstruction. No history of hernia could be elicited other than that at times there was a sense of fullness in or near the right inguinal region, and on examination no swelling in either inguinal region was noticed nor was there impulse on coughing. The external inguinal ring on either side was of normal size, and the condition was not associated with undescended testicle. The patient was in a serious condition and was at once prepared for operation.

Operation.—Median incision below the umbilicus was made and a considerable quantity of serosanguinous fluid evacuated. The bowel, of brownish-red color, was distended with gas, and contains liquid fecal matter. In the region to the right of the bladder, a tumor-like mass about the size of the fist was encountered, and it was learned that this mass was a sac containing strangulated bowel. The opening of the sac formed a ring which constricted the bowel and which, when severed in a direction toward the median line, was not attended with hemorrhage.

The sac contained 18 inches of gangrenous bowel, the condition being such that resection was necessary. Anastomosis was made with the Murphy button, the proximal portion of intestine having first been drained of its contents by means of a rubber tube which was fastened into the gut. The sac had no communication with either the internal or external inguinal ring. It was brought forward and after independent drainage was established, the opening was sutured to prevent recurrence of the trouble. The peritoneal cavity was copiously flushed with saline solution, drains were placed, and the abdominal wound was closed. Four days after the operation, the patient died suddenly, apparently from acute cardiac dilatation due to septic myocarditis. At the

autopsy, the sac which was as large as the fist, was found adjacent to the right side of the bladder and on account of the invagination caused by the hernia, there was on the internal side a double layer of peritoneum. The opening, nearly 3/4 inch in diameter, was situated behind the external ring, and the inguinal canal itself was intact. The margin of the ring was thickened, indicating that the condition had existed for some time.

Case II.—The patient was a white male, sixty years of age, who desired an operation for a right femoral hernia. He had, in addition, cystitis and retention of urine, due no doubt to the presence of a urethral stricture.

On January 25, 1908, an operation for femoral hernia was undertaken. The incision was parallel with the vessels and the sac was isolated. The sac contained omentum which had become adherent. The omentum was liberated as high up beyond the ring as possible and was severed. The cut end did not retract into the abdominal cavity as readily as is normal in these cases, but this condition was explained by the presence of adhesions. After high ligation of the sac and removal of the redundant portion, the stump, was allowed to retract toward the abdominal cavity. The fat about the opening was removed, and the operation was completed with the usual skin closure.

The patient stood the operation well, but in a few days, owing to the urinary conditions, the wound became infected. He became nauseated and vomited and it was thought symptoms of peritonitis were present. Five days after the first operation, a second operation was performed which was exploratory in character. An incision was made through the lower portion of the right rectus muscle and on examination, the omentum was found to extend through a small ring in the peritoneum and to occupy a sac to the right of the bladder. The omentum was delivered from the sac, and the matted portion was ligated and removed. There was no peritonitis. The bladder was distended and the urethral stricture having been dilated, the bladder was irrigated.

The original condition was now more clearly understood. There had existed a bilocular hernia, one portion of the sac contributing to the formation of a femoral hernia, the other portion to a properitoneal hernia. The contents of both loculi consisted of adherent omentum. The patient died on the day following the operation. The autopsy revealed a cellulitis of the

right inguinal and femoral region, ureteritis, cystitis, dilatation of ureter and pyelitis.

In a series of some 500 operations for hernia, the condition of properitoneal hernia was encountered but twice or in 0.4 per cent. of the cases. Interstitial hernia was encountered more frequently and was associated usually with undescended testicle.

The earliest description of the properitoneal hernias was given by Parise in 1851. Kroenlein in 1876 and later in 1880 made a comprehensive study of types of hernias and collected twenty-three cases. Later a pupil of his, W. Breiter, collected in 1895 thirty-six additional cases. The subject has also been reviewed by Moynihan, Macready, Sultan, Coley and others, and interesting speculations as to the cause of these hernias have been made.

In the light of modern research, abundant investigation has demonstrated that in most cases, hernias associated with the inguinal or femoral canals occur in preformed pouches and may be regarded as of congenital origin (Cohn, Rokitansky, Russell, etc.). This conception in the formation of hernia aids us greatly in explaining the occurrence of interparietal and bilocular hernia, especially when associated with congenital defects. Most cases occur in the male and are associated with imperfect descent of the testis. However, in the cases herewith reported, no such anomaly was present. In Case I, the hernia was properitoneal and monolocular. In Case II, the hernia was bilocular, the inner locula being properitoneal while the outer was found in the femoral canal. The bilocular form is the one most frequently met with, although it is rare to find the outer sac in the femoral canal. In some instances, the theory of the formation of hernia on the basis of prenatal origin does not seem to maintain, and the condition may be explained by a study of the anatomical relations of the inguinal canal or by the formation of the internal portion of the abdominal wall which often presents pouches in which the obliterated hypogastric artery plays a not unimportant part.

The inguinal canal, according to Eppinger, may be divided into three portions. The first portion begins at the internal ring and extends to where the infundibuliform fascia enters the transversalis muscle. This portion of the canal is surrounded by preperitoneal areolar or fatty tissue. The second portion of the canal is surrounded by the transversalis and internal oblique muscle which make the walls of this portion of the canal resistant. The third portion extends from the internal oblique muscle to the opening in the external oblique muscle and here again there

is usually a deposit of fat and loose tissue. Owing, therefore, to the nature of the surrounding structure of the canal, interparietal hernias may occur at either the first or third part of the canal. If a pouch is developed in the first portion and its progress along the canal is impeded, for example, by undescended testicle or by hydrocele of the cord or of the canal of Nuck, a hernia of the properitoneal type may develop and the sac may be situated either internal or external to the ring. More frequently the sac develops in the third portion producing the interstitial type of hernia.

If a sac having thus originated in a part of the inguinal canal is also prolonged along the inguinal tract, the bilocular type of sac is produced, and both loculi will have a common opening which leads into the abdominal cavity. Whether the above explanations maintain, whether the properitoneal hernias are due to "reduction *en masse*" to congenital abnormalities, to the formation of first an inner and later an outer sac, or *vice versa*, there are anatomical considerations due to formation of the internal abdominal wall that may at times be of equal importance. If the region of the inguinal or femoral canal be examined from the internal or peritoneal side, a number of pouches or depressions will be observed. A number of investigations relative to the nature and formation of these pouches were made in the anatomical room by Dr. Wm. T. Coughlin, and also by myself, and it was found that the obliterated hypogastric artery by throwing the peritoneum into folds, played an important part in the formation of these pouches or fossa which would predispose to the formation of hernia, especially of the properitoneal type.

In Case I, the hernial opening was posterior to the external ring and was in relation to the obliterated hypogastric artery. The sac took an inward direction and was perivesical in its relation to the bladder. It was unilocular and had no connection with the inguinal canal. We have observed cases in which a knuckle of bowel was caught in the first portion of the inguinal canal (Richter's hernia) and it seems plausible for a hernia to likewise originate in any of the pouches of the inner side of the abdominal wall. I believe the properitoneal hernia in Case I must have developed in a similar manner.

In Case II, the inner sac may have originated in the region of the femoral ring and formed first the properitoneal sac and later the femoral sac, as the femoral sac may have developed first and by efforts at reduction, the properitoneal portion was pro-

duced. However, in the light of modern investigation as shown by Russell, one or more congenital or preformed pouch may be present in or near the femoral canal, and I am inclined to consider the hernia in this case as one of prenatal origin. As to the etiology of these hernias, it seems best to consider each case by itself, for it is probable that a number of factors are at work in their production.

Compared with the inguinal variety, the cruro-properitoneal type is much the rarer form, and Breiter has collected only nine cases. Bull and Coley were the first to report the occurrence of properitoneal hernia in the female, three such cases having been observed by them.

The symptoms of properitoneal hernia depend mostly upon the condition of the bowel which is involved, and when present, are characterized usually by those of acute or subacute strangulation. A patient with a properitoneal hernia may go along for years and only realize that something is wrong when strangulation of bowel has occurred. In general, the symptoms may differ in no way from those which would be produced by hernias of the ordinary type.

The diagnosis is important though it is usually made with some difficulty. In certain cases, there being no physical signs present, the diagnosis may be impossible and the true condition is only learned at operation or at autopsy. Tumefaction which was present, in twenty-two out of thirty-six cases in Breiter's collection, may be found and is an aid in diagnosis. By rectal digital examination, it may be possible to detect the mass of a properitoneal hernia when situated in the pelvis. The relation of properitoneal hernia to undescended testicle should be borne in mind, for certain of the cases are of congenital origin. Special effort should be made to determine, if possible, whether the sac of the hernia is monolocular or bilocular, and to notice if the condition resembles a hernia which has been reduced *en masse*. Strangulation may occur at the neck, common to both sacs, at the neck of either of the saes of a bilocular hernia, or at the abdominal ring. In a monolocular hernia, the entire condition may be concealed.

The treatment of a properitoneal hernia is surgical, and as most of the cases are seen late, this resolves itself into the treatment of strangulation or of obstruction of bowel. The properitoneal sac may require special treatment and is at times difficult to eradicate. In the multilocular variety, the pro-

peritoneal sac should be carefully examined and its contents treated for in certain instances, it is easy to overlook the inner sac. Owing to the concealed nature of the sac, an abdominal operation will usually be found the most satisfactory.

In conclusion it should be remarked that in the diagnosis of strangulated bowel, properitoneal hernia should receive proper consideration.

That in operating for simple hernia, one should have in mind the possibility of multilocular sacs, the innermost one being properitoneal in character.

That properitoneal hernia, while most frequently congenital in origin, may also be acquired, as is shown by a study of anatomical specimens.

That the condition is frequently overlooked or goes unrecognized until the symptoms of bowel obstruction are present, when urgent surgical measures furnish the only means of relief.

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METROPOLITAN BUILDING.

TUBERCULOSIS IN ITS RELATION TO PREGNANCY, LABOR AND THE PUERPERIUM.

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THE subject of tuberculosis, and in particular, pulmonary tuberculosis, is to-day attracting worldwide attention. In this country alone, millions of dollars have been expended in the endeavor to check the onslaught of this devastating disease. Volumes have been written on the etiology, prevention and treatment, and yet, I find that in the United States, only a comparatively small number of the many thousands engaged in this fight against the "Great White Plague" have turned their serious attention to the relationship of tuberculosis to parturition. What is being done for these unfortunates to-day? The superstition is still prevalent among the laity, and even among a considerable number of the medical profession, that pregnancy is on the whole *not* harmful, yea, that it may at times be of benefit, to the woman afflicted with a tubercular lesion. Supposing even that the more progressive practitioners admit that pregnancy is *not* desirable for a tuberculous woman, how many of these realize the actual seriousness of this relationship? The fact is, and I shall now endeavor to convince you thereof, "the *strain of child-bearing exhausts the vitality of the tuberculous subject*, and in a *high percentage of cases brings about an untimely end.*

I will ask you to consider the subject with me in the following order:

1. The effect upon the pregnant woman, of an active tubercular lesion.
2. Tuberculin reaction during pregnancy.
3. What effect does an active tuberculosis in the parent have upon the offspring?
4. What shall be our attitude in regard to lactation?
5. Treatment.
6. Tuberculosis and marriage.

(1) The effect upon the pregnant woman, of an active tubercular lesion. This admits of two subdivisions,

A. Does parturition lay the foundation of tuberculosis?

B. Is an existing tuberculosis aggravated by parturition?

(A) Fishberg states that in 286 married tubercular women under his care, 107 or 37.4 per cent. claimed that they had had no pulmonary symptoms until after one or more childbirths, and P. Jacob and Pannwitz, that in 337 cases of tuberculous women, 25 per cent. traced the origin or aggravation of the disease to pregnancy. Again, Maragliano in 385 women found that 226 or 59 per cent. believed the tuberculosis had started during parturition. Trembley, Charles C. (Saranac), says in this connection that a compilation of the histories of tubercular women who have borne children reveals an astounding number of cases which attribute the onset of their symptoms to pregnancy and parturition. In his series of 240 cases, 151 or 63 per cent. gave a positive history of a tuberculosis originating or at least definitely recognizable after the birth of a child. In some instances the definite recognition of the disease was some weeks or even months after the confinement, but investigation revealed the fact that following delivery a condition arose, variously diagnosed, which eventually proclaimed itself as tuberculosis. Although these figures may be open to some error, still *they do* show *that*, in *many cases at least*, pregnancy—especially if rapidly repeated—is *directly* responsible for the *development* of *tuberculosis* in a susceptible individual, or *may* cause a *dormant tubercular* lesion to be *rekindled*.

(B) Is an *existing tuberculosis aggravated by pregnancy?* In a subject of this character, a subject in which accurate data are hard to obtain, it is not perhaps strange that differences of opinion still exist. We cannot, however, deny that the majority of those who have been close students of this question firmly believe in the baneful effects of pregnancy and the puerperium upon all types of *active* tubercular processes.

Lebert states that 75 per cent. of tuberculous cases are badly influenced by pregnancy and the puerperium; Deibel, 64 per cent.; v. Rasthorn, 70 per cent. Kamminer found that 66 per cent. of his list were influenced perniciously, but that the mild cases showed no change. v. Bardleben writes that from the communication of fourteen correspondents 71 per cent. grew worse from parturition; and further, that from the statements of nineteen correspondents, 47 per cent. of the active cases proved fatal.

Ellis Essen-Möller found either severe aggravation or death in 50 per cent. of his cases.[1] In a series of our own, published in 1908,[2] 34 per cent. were mild cases, with slight cough and moderate temperature reaction. In all these mild cases there was a moderate aggravation of the symptoms in the course of the pregnancy, but in most of these, this aggravation subsided within eight to twelve weeks after labor; 16 per cent. were chronic, healed cases, showing no symptoms; in 12 per cent. the cases were severe in type. All showed a marked decline during the last trimester of the pregnancy. In these, the cough was very troublesome, the sputum abundant, the temperature curve irregular. There was decided loss of flesh and strength during the last two months of pregnancy. In 38 per cent. of the cases the disease was far advanced when first seen by us. These thirty-eight cases were all, undeniably, seriously affected by parturition. Nineteen cases died (one in the eighth month, undelivered; two in labor; sixteen in the early weeks postpartum).

The bad cases seem to lose ground rapidly either during labor or within a few days thereafter. These two periods can therefore be regarded as the periods of the most acute danger.

During the puerperium the tuberculosis may at any stage assume a fulminating character and may cause death in a surprisingly short space of time. This can occur in all types, with active lesions and occasionally even in cases of only moderate severity. I would accentuate this statement for it is generally not recognized.

Since 1908 I have personally met with approximately forty additional instances of this complication. In this series, thirty cases were mild in character. All of these passed through the pregnancy without serious features and yet, in almost every case, there developed toward the end of pregnancy a moderate aggravation of the temperature curve with or without cough. If there had been any gain in weight in the middle trimester, this gain was changed to a loss either in the last month of pregnancy or in the first six weeks postpartum. Ten cases were severe in type. As in the first series I find that in all of these ten cases the pulmonary condition was markedly aggravated by

[1] Trembley (Saranac) says that "In nearly every case of quiescent or arrested tuberculosis, and in all cases where the process was progressive, the pregnancy or the puerperium was attended by very serious renewal of activity, resulting either in dissemination of the disease throughout the pulmonary system, or in attacking other parts of the body."

On the other hand, *Pinard*, from the study of over 7,000 obstetrical cases, claims that the dangers from this complication have been greatly overdrawn.

[2] From the services of the N. Y. Lying-In Hospital.

the pregnancy. Of the ten cases six died within three months after the labor.

This series of forty cases included a number of private patients who were able to spend the greater part of the pregnancy in the country or mountains. The difference in the results and deductions of some clinicians must be due, I think, to the differences in the severity of the disease in the several clinics. The results depend to a considerable degree upon the social status of the patients. The *poor laboring women suffer the most severely.*

To obtain accurate data the patients must be followed for at least three months after delivery. Repeated pregnancies are especially undesirable.

Laryngeal Tuberculosis.—All observers seem to agree that laryngeal tuberculosis complicated by pregnancy is a source of the gravest danger to both mother and child. This statement is confirmed by such men as Grosskopf, v. Rosthorn, Kuttner, Juracz, Freudenthal, Sokolowsky, Pankow, Hellenhall. Kuttner claims that 90 per cent. of active cases are doomed thereby to an early death. Of 231 compiled cases 200 died during labor or soon thereafter. Abortions and premature labor are especially prone to occur with laryngeal tuberculosis. About 75 per cent. of the infants succumb during labor or soon after.

Tuberculin Reactions during Pregnancy.—Wolff-Eisner, Robert Stern (Breslau), Bar, and others, have shown that a "lessened reaction to tuberculin tests" is seen during pregnancy. This *lessening* of susceptibility, progresses up to the time of labor, then gradually returns to the normal degree of reaction. Bar in a group of thirteen pregnant women, with râles and temperature, found a positive reaction in nine cases, and a negative one in four. Of these four cases all were much worse at the end of the pregnancy and two died. Of the nine positive cases, three had a particularly marked reaction and at a later date seemed to improve. Bar, Schmorl, Schlimpert and a few others believe that the "lessened susceptibility" during the last trimester of pregnancy *may* be due to a developing tuberculosis of the placenta. This latter condition, as we shall later observe, may not be as uncommon as has generally been supposed.

To Summarize.—From the figures so far presented we may, I think conclude with some positive degree of assurance, that

1. Cases with a "healed tubercular focus" may proceed through pregnancy, labor and the puerperium with little or no disturbance.

Rapidly repeated pregnancies have a tendency to cause a renewed outbreak.

2. Latent tuberculosis *not* infrequently becomes an active tuberculosis, under the damaging effect of parturition.

3. Mild cases with slight temperature and moderate cough *may* stand the strain of pregnancy, with apparently little damage; on the other hand, many even of these mild cases are aggravated thereby (35 to 60 per cent.).

4. The deleterious effect is seen, without question, in the majority of the *more severe* cases. In *all* advanced stages of the disease the danger is very great, terminating in practically all cases in an early death.

5. The two periods of greatest danger are (*a*) during labor and (*b*) in the early puerperium.

The prolonged muscular exertion of the labor (the labor should be made as easy as possible), the loss of blood, with its attendant exhaustion, the use of anesthesia and the possibility of renewed toxins or tubercle bacilli being thrown into the system from the placental site by the action of the uterine contractions are *all* serious and far-reaching in their results. The puerperium is the period in which the greatest number of the deaths occur. This is dependent in part upon the damaging effect of labor, in part upon rapid katabolism, and in part upon tubercular lesions of the placenta, uterus or Fallopian tubes. Moreover, the puerperium is all too frequently the starting-point of a tuberculosis of the lungs.

III. What *effect does an active tuberculosis in the parent have upon the offspring?*

Pregnancy occurs readily in the milder forms of pulmonary tuberculosis. In the more advanced cases susceptibility to impregnation is, I think, somewhat lessened. After conception has taken place, it is but reasonable to suppose that abortions are somewhat more common than in nontubercular cases. This is partly due to the cough, partly to the vomiting, or to the temperature; it may be due to an endometritis or to a beginning tuberculosis of the decidua. We find, moreover, that the tendency to premature labor is even greater than the tendency to miscarry. This is particularly seen in tuberculosis of the larynx. When the disease is stationary or when the pulmonary condition is but moderately active, it is possible for the tuberculous woman to bring forth an apparently well-nourished, active and healthy child. This fact is but seldom noted in the severer

grades of tuberculosis. While apparently some children are born healthy, they are more frequently found to be poorly nourished and underdeveloped. Moreover, the majority of the apparently healthy children, if kept under observation beyond the short obstetrical period, show a tendency to develop signs of malnutrition or of tuberculosis itself, unless they are fortunate enough to be watched over with extreme precaution.

Congenital tuberculosis does occur, but only in exceptional instances. Of late, a number of the best foreign observers have been disposed to believe that a good many of the so-called early postnatal infections have in reality been cases of intrauterine infection. Certainly in the light of the recent work on tuberculosis of the placenta, etc., this possiblity should be carefully weighed. Francine contends that the tubercle bacillus may lie dormant in the lymphatics of the new-born and not become active until some weeks after birth. To-day such men as Jung, Schmorl, Baumgarten cling strongly to the belief that *not* infrequently tubercle bacilli are to be found in the blood of the new-born. Even if we believe that the "villi" must be damaged in order to allow the passage of tubercle bacilli, we may still readily appreciate how this injury can take place during the height of the labor. Schmorl, Schlimpert, Norak, Ranzel, and others, consider it quite possible and probable that during hard uterine contractions tubercle bacilli are forced from the placenta into the fetal circulation. According to Weinberg, 67.9 per cent. of infants of tubercular parents, whose mothers died within one year after labor, died likewise within the first year of life, as against a normal death rate of 25 per cent. Of fifty-seven infants born alive, whose mothers died within four weeks of labor, 78.8 died within the first year. If to these early cases we add the vast army of children that later develop the disease from contact with the tuberculous parent, we will appreciate the great toll on health and life, due to faulty inheritance and faulty surroundings.

Miller and Woodruff (New York) found that 51 per cent. of 150 children of tuberculous parents were positively tuberculous, and that 20 per cent. were doubtful. Floyd and Bowditch (Boston) have shown that 36 per cent. of the children of tuberculous parents gave definite signs of tuberculosis of the lungs and 30 per cent. of tuberculosis elsewhere. P. F. Armand-Delille has recently proven that 238 out of 396 children of tuberculous parents, *i.e.*, over 60 per cent., developed pronounced

tuberculosis when left in more or less constant contact with their parents.

IV. *What then shall be our attitude in regard to lactation?* Women with passive and mild pulmonary tuberculosis may at times nurse with impunity both as regards themselves and their offspring. This, however, is surely *not* the rule. Nursing of an infant by a known tubercular woman is a double menace and should, I believe, never be allowed. This I consider all-important, if our warfare against tuberculosis is to make progress. The mother's strength has been sorely tested; the nursing will inevitably be an additional drain on her vitality. In even the mild cases nature requires every chance in order to overcome the tubercular lesion. Both pregnancy and lactation abstract calcium salts from the body economy, salts of great value to the patient in her pathological state. Again, even though the mother may seem in fairly satisfactory condition during the early weeks of the puerperium, her ultimate recovery is yet more likely to be retarded, if nursing is indulged in. This I have seen time after time. In advanced cases, nursing is absolutely to be condemned.

In Regard to the Child.—The child enters life as we have just seen heavily handicapped. The two essentials for its welfare are (1) proper nutrition, (2) wholesome surroundings. Although breast milk is the ideal food for these infants, although the mother's milk may cause a gain in weight, and although human breast milk contains tubercle bacilli *only* in most exceptional cases, nevertheless I believe firmly that the majority of such children will thrive better on the milk of a wet-nurse or on cow's milk properly prepared. Should nursing be allowed, it should only be carried out under strict supervision, ever mindful of the great danger of contamination from the mother.

In all truly active cases the ideal method is the isolation of the child. To the parents, to the friends, yea to the average practitioner this may seem unnecessary and even cruel; but, gentlemen, such a course *is* essential if the tender life is to be preserved.

Recall once again our figures—50 per cent., 60 per cent., even 75 per cent. of infants (according to Lebert) die in the early months when born of tubercular parents and when allowed to remain in contact with them. The truth of this high early mortality has been verified by many observers such as Kamminer, Deibel, Ysendick, Pfortner, and the writer. The deduc-

tion I would impress upon you, then, is that *maternal lactation is on the whole bad both for the mother and for the child.*

TREATMENT AND GENERAL MANAGEMENT.

(1) General treatment.

(2) Obstetrical treatment.

The medical and hygienic treatment resolves itself into practically the same general methods that are employed in nonpregnant tubercular women. The difficulties, however, are far greater and yet these cases are more in need of judicious care and advice; good food, an abundance of fresh air and a quiet mode of life, than perhaps any other class. These difficulties depend essentially upon three factors: (*a*) many of the patients being married, cannot or will not leave their city home—whether private house or tenement—to go to the country for a sufficient period to make the change of real value. (*b*) Being pregnant and tubercular, they are refused admittance to the majority of "charitable homes" or sanitaria. Even in the last weeks of pregnancy they do not find a cordial welcome, if the tuberculosis is severe, excepting in a small number of hospitals. (*c*) With the present system of hospitals, sanitaria, etc., it is difficult to seek health away from home, owing to the insufficient provision made for competent obstetrical care. What these poor afflicted ones need is better supervision from the beginning of pregnancy and watchful, diligent treatment for at least six months after the abortion or the birth of the child.

(2) The obstetrical management divides itself into four operative procedures:

(*a*) Simple artificial abortion.

(*b*) Artificial abortion followed either immediately or at a later date, by resection of the Fallopian tubes.

(*c*) Abdominal or vaginal hysterectomy after the removal of the fetus.

(*d*) Artificial abortion followed by "excision of the placental area" per vaginam.

Remembering then that pregnancy is frequently the "initiator" so to speak of the tubercular state, that it usually aggravates an existing tuberculosis, that the severe cases are hurried to an untimely death, and recalling, moreover, that the child, if born alive, is inevitably greatly handicapped, it would seem to me that operative interference is demanded under the following conditions:

During the first three to four months of pregnancy an abortion should be performed where possible in all active cases, and the less delay there is the better. In cases with the tubercular tendency, but with no active lesion, this operation is *not justifiable;* it is *not* indicated in cases with healed lesions providing the patients are in good general health. If the operation is performed early in pregnancy, under the strictest aseptic precautions and preferably after a preliminary twenty-four hours' tamponage with 5 per cent. iodoform gauze, it will disturb the patient but little, and will in most instances forestall the more serious changes incident to uninterrupted pregnancy. All operations performed under these circumstances demand light and scientifically administered anesthesia. Furthermore, I believe that after emptying the uterus it is a distinct advantage to lightly tampon the uterus with 40 to 50 per cent. alcohol gauze for twelve hours. After recovery from the curetage, the hygienic treatment should be resumed with earnestness and should be continued as long as possible. While the therapeutic abortion is so often indicated, the induction of premature labor is *not.* It is well, at this point, to state emphatically that a consultation is essential before undertaking any one of the operations under discussion. This is required both for the benefit of the patient as well as of the surgeon. I know scarcely anything that is more disturbing than after a legitimate curetage for tuberculosis to have the patient return a few months later with the sad story "of another slip up" despite all precautionary measures. The perplexing question has to be faced anew and is really in actual practice a difficult one. Obviously such a result is not satisfactory. In order to treat these patients with greater intelligence, the operation of salpingectomy is now being widely urged in all *active early mild* cases in which the uterus is emptied. All patients will not submit to this, but I believe, after a careful study of the question, that the operation should be considered. By emptying the uterus in these early mild cases the patient's health may be restored and life prolonged many years. If in addition, a salpingectomy is performed (this I am not now ready to advise in all cases), the patient's health will stand a far greater chance of remaining good, and all danger of bringing poorly nourished offspring into the world will have been removed. It is in these *mild cases* that we find the greatest hope from radical interference and yet it is in this very type that the greatest laxity exists

among the profession and laymen in the event of pregnancy. In pulmonary tuberculosis of *greater severity* seen during the *first three to four months* an abortion should be performed; but this operation may prove of more value if followed immediately by abdominal or vaginal hysterectomy. Radical interference, as I shall presently show you, is the only way of offering these women a fair chance of improvement. Veit, from a study of 347 collected active cases in which abortion alone was performed, has shown that 43.3 per cent. were not helped by it, while v. Bardleben claims that 50 per cent. of his actively progressing cases died after artificial abortion. Weil advises early abortion but cites two cases that developed acute miliary tuberculosis after operation. Klein, Thorn, Rose and Hunziker have likewise reported instances of acute miliary tuberculosis after this operation.[1] During the middle months of pregnancy, artificial interruption is only to be undertaken when the disease is *progressive* in character and this operation should here also be followed by either abdominal hysterectomy, as advised by Bumm and Henkel, or by vaginal excision of the body of the uterus. In those cases that are found to be failing *rapidly*, whether it be during the middle trimester or late in the pregnancy, no operation will prove of much value. This fact is important. In this group, conservatism is indicated and conservatism only.

Why are the results so unsatisfactory in the severe cases? In order to answer this important question we are forced again to study the investigations of foreign observers. From them we learn that despite the teaching of the past few years the high morbidity and mortality are dependent upon a tuberculosis of the placenta. It is now believed by many thoughtful students of the subject that tuberculosis of the decidua and placenta is far more common than has heretofore been admitted. As late as 1905 this occurrence was deemed to be exceptional (Schmorl, Geipel, Wollstein, etc.). Since then, however, in the effort to explain these phenomena, a far more painstaking study has been undertaken. With greater patience and with renewed diligence, even studying many hundreds of sections from a single case, tuberculosis of the decidua and placenta has been found to be of frequent occurrence. Schmorl, Geipel, and Wertheim *now*

[1] On the other hand, Trembley reports twenty-nine cases of therapeutic abortion at Saranac, with only one questionable result. It should here be stated, however, that Tremley's cases were, at the time, in ideal surroundings.

assert that it is found on an average in 45 per cent. of tubercular pregnant women. This percentage is higher still when those cases are included, in which tubercle bacilli are found without definite tubercular changes in the tissues.

Norak and Ranzec found the changes in seven out of ten cases; Schlimpert in eight out of eleven (five of these being in the fourth or fifth month of gestation).

According to v. Bardleben, "the placenta is the locus minoris resistentiæ" and is especially well adapted for catching and harboring the tubercle bacilli. This is attested to by such men as Lippmann, Lüdke, Liebermeister, Schnitter, Jessen, Rabinowitsch, Forster, Bencke and Kürbitz. Upon the separation of the placenta, the intervillous spaces, the favorite resting places of the bacilli are then traumatized and the bacilli are cast anew into either adjacent structures or into the system at large. "The essential difference between the influence exercised upon active progressive pulmonary tuberculosis and upon the inactive type can be explained in the following way: In the one case the possibility and the probability are great, in the other, slight, of tubercle bacilli being carried through the blood stream to the placental site. In the severe cases a vicious circle is established.

These investigations, if proved to be entirely tenable (and in this remark there is no disrespect toward the authors of this work), will clear up the mystery that has surrounded this subject for so many years. It is most important that every case of tuberculosis and pregnancy be studied in this same patient and diligent manner; for if these findings are corroborated by further research we will be forced, even against our will, to resort to the more radical operative procedures in order to eliminate the uterine portion of the vicious circle.

The two procedures employed with this aim in view are hysterectomy and in the early months vaginal excision of the placental site. To all of us the latter operation is an entirely new procedure and will not, I think, appeal to many of us, despite the excellent results of its originator, v. Bardleben. The abdominal hysterectomy should, I think, be considered the operation of choice, for it is easier of execution and the abdominal route enables a more thorough inspection of the appendages in case these are likewise the seat of disease.

V. Bardleben in 112 active cases, found that

Fifty-two were aborted, with 36 per cent. mortality,

Eighteen were aborted, with hysterectomy, with 6 per cent. mortality,

Forty-two were aborted, with vaginal fundus excision with thirty-three living at the end of one year.

v. Bardleben's method of eliminating the danger zone "per vaginam" is carried out in the following steps, viz.: Long anterior colpotomy; dissection of the bladder from its uterine attachment; withdrawal of the fundus uteri and appendages through the colpotomy wound, ablation of tubes and of the fundus; suturing of the stump; covering of the stump with the bladder reflection of the peritoneum and closure of the colpotomy incision. He claims that both this operation and the abdominal hysterectomy have a striking effect upon the tuberculosis.

Tuberculosis and Marriage.—With our present knowledge of tuberculosis we must realize that it is a disease the ravages of which are widespread, that it is a disease which plays a large part in the depopulation of the nation (in 1910 in the United States the deaths alone were estimated to be 165,549; and this figure disregards all abortions or stillbirths directly or indirectly traceable to the tuberculosis of the mother), and that the ravages produced thereby are generally accentuated by pregnancy and labor. Moreover, we should realize tonight, if never before, the baneful effect of parental tuberculosis upon the offspring. What is our attitude to be in regard to the great problem of marriage and procreation? This attitude will be governed by our attitude toward the national questions of race betterment, of eugenics, and the welfare of the home.

Tubercular women should be advised not to marry until the process is fully arrested. The time-limit is usually placed at from one to three years after the pulmonary lesion is healed. This is most important, because (1) with one of the couple tubercular, the other may readily become so and (2) because conception will frequently take place and then we will have to face the serious problem of the pregnancy with its results. The time will come, I think, when no marriage license will be granted unless both of the contracting parties are in sound physical as well as mental, condition. If despite warnings, tubercular individuals *do* marry, they must be warned anew of the dangers of conception. Insistence must be placed upon hygienic living under the best conditions available and just so long as a lesion is active in either husband or wife just so long should precau-

tionary measures be adopted to avoid conception. Under such circumstances it is the physician's duty to see that this is carried out. Preventative treatment is after all the great mode of attack. These individuals will *not* be continent, they need rational management and education along these lines—not for selfish motives, to be sure, but for the welfare of the greatest number.

Conception in the active cases means, as we have seen, early death of the mother in a large percentage of cases or a child with hereditary predisposition or the necessity of more or less constant exposure to postnatal infection (Knopf).

Veit says (and this may be possible in Germany) that if a tubercular woman marries despite advice she should be forced to go to a sanitarium until cured. Jacobi has tersely put it: "You build asylums for the diseased neuropathics and drunkards; nurseries and schools for epileptics, cretins and idiots; sanatoria for incipient tuberculosis and refuges—all too few—for the dying consumptives." But do we not begin at the wrong end? Consumptives, epileptics and idiots are allowed to propagate their own curse—both legitimately and illegitimately. The only protection for the family, for the nation, for mankind is the assurance of a healthy, uncontaminated progeny. Strict laws are required to accomplish this, laws that will be held in high disfavor by the syphilitic, the epileptic, the tubercular and the vicious.

Knopf believes in "vasectomy" for all tubercular male patients and salpingectomy for all tubercular female patients—married or not—who will submit to the operation. He would make this obligatory for all acutely active cases that insist on marriage, despite strong medical advice. This attitude of Knopf, is shared to-day by many clinicians who have studied the problem thoughtfully and who have broken away from the narrow-minded ways of the past.

Finally, we should remember that what has been said of tuberculosis alone applies with even greater force when this disease is associated with either syphilis or alcoholism. Fortunately nature, in her great wisdom, protects herself in a large measure in the presence of "mixed tuberculosis" and syphilis by causing a phenominally high intrauterine death rate in the progeny of this "vile combination."

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SARCOMA OF OMENTUM.

BY

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A SARCOMATOUS growth located primarily in the omentum is somewhat of a rarity. Most text-books do not refer to it, and some authors even deny that sarcoma is ever found as a primary affection in the omentum, but claim it to be secondary to that in the peritoneum. This, however, is not well taken, as the few cases recorded are sufficient to substantiate its existence as a primary growth. The omentum as a structure has afforded material for numerous investigations and research work.

Hadra (*Annals of Surgery*, 1891) states the following:

1. It serves as a protective padding to the abdominal cavity from forces from without.

2. It protects the peritoneal cavity from infection from diseased points within. Thus, omental adhesions will be found wherever there are pathogenic germs setting up trouble.

Rubin on "Functions of Great Omentum" (*Sury. Gyn. and Obst.*, 1911) claims that the omentum has no spontaneous motility, that all displacements may be explained as follows: (a) intestinal peristalsis, (b) intraabdominal tension, (c) static conditions of stomach, colon and small intestine, and (d) its anatomic relations to gall-bladder and spleen. Furthermore, he states that the omentum has no demonstrable chemotaxis. It cannot restore vitality to necrotic organs, nor give any vascular supply to those deprived of their circulation. The usefulness of the omentum in inflammatory lesions of abdomen depends upon its power to form adhesions which isolate and render inocuous toxic products or destroying them by virtue of its phagocytic elements. But when contrasted with the sequelæ, intestinal obstruction and pain, its beneficence is overbalanced. Its chief functions are those of any other mesentery, namely, to fix the viscera and to aid in vascular supply.

The omentum is capable of absorbing large quantities of fluid and particles in suspension. As to grafting, those who have done work along this line warn us, that we must not expect too much from this procedure, that if any portion be detached, it soon becomes necrotic and is followed by disastrous results.

However, we find by searching the literature that omental grafting has been tried many times and that it has attached itself to serous structures, the proof being formed by reopening the abdomen. At this point, I present the following case for your consideration.

Mr. B., a baker by trade, had a small left inguinal hernia for a number of years which gave him little or no trouble, as he wore a well-fitting truss. He claims that on lifting a barrel of flour he felt something give way, had some pain at seat of rupture and found he could not replace mass as readily as he formerly did, and that it was much larger, now being the size of an egg. The truss was still worn over the rupture site, but there was now always some pain and so he consulted his physician Dr. Gould of Bellevue, Kentucky, who advised operation. This was not consented to and it was only upon the growth becoming much larger, that at last (after a period of two months from the time of first consultation) he finally consented to operation and then it was that I first saw him.

Patient was aged thirty-two, of fleshy build, 5 feet 5 inches in height and weighed 210 pounds. Had had the usual sicknesses of childhood, but since then has been perfectly well (with the exception of rupture) up to three months ago. He consulted his physician on account of pain, an increase in size of scrotal tumor, at times nausea, some loss of appetite, constipation and an inability to perform his usual vocation with his wonted energy. Had lost in weight about 40 pounds and as he expressed it, felt at times miserable. Upon examination I found an inguinoscrotal mass on left side, size of a cocoanut, somewhat tender to pressure and slightly edematous. The hernial mass for the past four weeks could not be returned to the abdominal cavity and seemed to be constantly increasing in size.

Patient sent to Bethseda Hospital and operated April 18, 1911. On opening sac I came upon a peculiar looking vascular mass, bathed in a bloody serum. The mass proved to be omentum having testicle and cord imbedded in it, and about two inches of pale flaccid small intestine. The sac was mopped dry, intestines separated, and traction made on omental mass with the idea of ligating it at suitable points, if a normal omental structure could be reached. There seemed to be something peculiar above, fastening it to upper part of hernial canal. The entire canal was then opened up where I could get a good view into abdominal cavity, and I found masses of paraffin surrounding the

opening and quite a mass in the abdominal cavity. I later found upon further questioning that patient had two years previously consulted a so-called specialist, who must have injected at least a pint of paraffin to cure this hernia. This fact was not stated to me on taking his history. Some of the paraffin was removed, three or four masses the size of a small lemon, omentum now dragged down and out of abdominal cavity and ligated, removing at least half of omental structure. The cord and testicle were also removed. Operation completed, scrotal sac drained, and patient returned to bed in good condition. Tumor mass examined by Dr. Gould and pronounced round-celled sarcoma. Pathologist to Bethesda Hospital gave report a few days later, also pronouncing it round-celled sarcoma. The portion of cord and testicle removed was found to be normal. Considering the clinical history as obtained and the microscopical report, this case is so submitted. Patient left hospital in three weeks and attended to business for a period of sixteen months, when he again consulted various physicians for intermittent severe pain, loss of weight and general weakness. He consulted me just before I left for my vacation when upon examination I found a large mass in left side of the abdomen, a partial giving away of hernial sac allowing some protrusion, and weight now had reached 160, making a loss altogether of 50 pounds Pain almost constant and was so severe at times that he could not attend to his business, and had to have repeated hypodermics of morphine. I advised a second operation but have not seen patient since my return from vacation I am not able to find another like case (that is, an omental carcoma incarcerated in a scrotal sac) in literature, and the subsequent history proves conclusively that it was a primary growth. It is naturally questionable, the rôle the paraffin injections played as to being a starting factor, by the trauma induced at the time of injection, and its presence as a foreign body, interfering with circulation and retaining omentum in this abnormal cavity.

Tilanus (*Annals of Surgery*, 1890) tried some very interesting experiments by attempting to inoculate sarcoma and carcinoma, but was not successful.

Baxter (*Annals of Surgery*, 1894) found that the omentum was subject to the same changes as the intestine, when dealing with hernial tumors. The bowel has the constant tendency to return to the abdominal cavity by its alternating emptiness and fullness.

The omentum normally is spread over the surface of the small intestines, but it is remarkable how it becomes displaced, rolled up, adherent and even enters other parts of body. Whenever the omentum becomes twisted, symptoms likened to those of intestinal obstructions occur. A strange phenonema and sometimes unexplainable is the presence in the hernial sac of the different organs of body, the pancreas having the distinction of, being the only one from the abdominal cavity which has never been found in this locality. The frequency of omentum in hernial sacs is well known.

Mayall in 283 cases of inguinoscrotal hernia, found intestine in 149, omentum in seventy-seven, and both present forty-seven times.

However, it is also well known that this relative proportion varies with the duration and size of the hernia. In early stages the omentum enters the sac, but when the opening becomes large enough the intestine forces its way in, this accounting no doubt for the different statistics as to varieties. Mayall found that the large intestine entered hernial sac in about the following ratio, twenty-two out of 443 cases, and of these eleven were cecal.

Time will not permit a review of the origin, clinical characters, varieties and changes of sarcomatous growths, other than to say, that this most malignant growth when met with, is usually disastrous. The opportunity for curing it, if this can be accomplished, is mainly by surgery, and the serum treatment is yet in its infancy, but promises much.

Bull (*Annals of Surgery*, 1893) called special attention to the dangers which may arise in removing portions of the omentum. He says they are:

1. Bleeding from an inefficient ligature.

2. Damage to neighboring intestine from a faulty application of ligature.

3. Danger of inflammation and abscess in omental stump when careless or faulty technic is practised.

Bonamy (*Revue de Gynecologie*, January, 1908) reports a case of primary sarcoma of omentum. He says, "I add another to the fifteen cases now on record" and summarize as follows: Only five survived one year in twelve operative cases. That sarcoma is very vascular and operative shock is very severe. The growth is usually located in the median line, it then develops rapidly downward, pushing down the genital organs. Infusion into the

abdominal cavity is inclined to be hemorrhagic, and the course of the usual case is one year.

I find a most excellent paper on omental sarcoma by Farrar Cobb (*Annals of Surgery*, 1906) in which he reports an interesting case. Patient, age fifty-one, with gastric symptoms, malaise, loss of weight, constipation alternating with diarrhea and at times dark and bloody stools, vague abdominal pains, but at no time any febrile reaction and an abdominal tumor found at examination. On operating, tumor was found to be a solid mass of large, round cells. I found, looking through literature, some additional cases, but these I find to have been collected by Cobb so I quote from his paper.

Matas (*Trans. A. S. Ass.*, 1899). Male, age forty-six, primary sarcoma of great omentum. Not able to remove all of disease at first operation. Patient did not survive a second operation made one year later. Diagnosis of growth—myxosarcoma.

Braun of Jena (*Deutsch. Zeitsch. für Chir.*, 1885), a case of myxosarcoma of omentum. This case was supposed to be the first where a careful microscopic examination of mass was made.

Czerny reports a similar tumor in a male, age twenty-seven.

Braun in his search of the literature could only find reports of three cases before 1885, those by Simon, Pean and Witzel, Pean's case being a large omental hemorrhagic cyst.

Eve (*Trans. Pathological Society*, London, 1885–6) reports two cases, one by Lawson Tait and one by Sir Spencer Wells.

Reamy (*Trans. A. G. Ass.*, 1883) reports a case of omental cyst with sarcomatous walls.

Segoud (*Bull et. Mem. Soc. de. Chir. de. Paris*, 1893) reports a like case.

Gross and Sencert (*Rev. de Gynecol. et Chir. Abdom.*, Paris, 1904). Female, age forty-three. Tumor originated in lesser omentum and gradually found its way into greater omentum by pushing down the transverse colon.

Gould (*Med.-Chirurgical Trans.*, London, 1900), a case of sarcoma of gastrohepatic omentum. Male, age thirty-eight, mass produced great displacement of stomach and intestines. Tumor was removed and patient lived four years.

Douglass (Surgical Diseases of Abdomen, page 703) a case of myxosarcoma of great omentum and autopsy revealed it to be a primary growth.

Anders (*Med. News*, Phil., 1891). Male thirty-five, with a probable primary sarcoma. Autopsy revealed a secondary

growth in liver. The first mass to appear was found in abdomen, there being no evidence of diseased liver until shortly before death.

Rochford (*Northwestern Lancet*, Minneapolis, 1904). Female, age thirty-seven, operation, spindle-cell sarcoma found. Patient had had tumor over a period of four years.

Schmidlechner (*Pester Med. Chir. Presse*, Budapest, 1904). Patient, woman, age forty-eight. Tumor noticed for period of one year. Operation, a spindle-cell growth found.

Chiarleoni (*L. O. No. of Avon Univ. di Med. E. Chir.*, Milano, 1886) reports a case.

Braidwood (*British Med. J.*, 1876). Female, forty-six, no operation. At autopsy spindle-cell mass found.

Launenstein (*Encyklops. d. ges. Chirurgic*, Leipsig, 1903) reports a case which died of gastric hemorrhage following operation. He states, that Friedrich has experimented on dogs and guinea-pigs in relation to this hemorrhage, and found that resection of omentum was liable to cause ulcers in stomach, duodenum, and multiple hemorrhagic and necrotic areas in the liver, therefore, he advised great care in handling and removing the omentum.

Reviewing the above very incomplete reports, I find twenty-two cases reported and as Bonamy's paper appeared in 1908, he must have included his fifteen cases among this number. Ages given only in nine cases as, thirty-two, thirty-five, thirty-five, thirty-seven, thirty-eight, forty-three, forty-six, forty-eight, and fifty-one, average thirty-nine. Sex mentioned in only eight cases, five males and three females. Results, some survived operation living up to one year, one to four years and that of mine of one and one-half years standing.

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OBSERVATIONS ON THE SURGERY OF THE LIVER AND BILE PASSAGES.

BY
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(With One Illustration.)

COMPARED with other portions of the body, the liver has been subjected to surgical attack infrequently, when its size, accessibility, and the frequency of disease of the organ are taken into consideration. The causes for this hesitancy upon the part of the profession to attack this organ lie in the friability of its tissue, the large blood supply, which has been difficult to control, the danger of pulmonary embolism after injury, the complicated function of the organ and its necessity to the life of the individual. All these conditions have tended to retard the development of surgery of the liver, professional energy being directed to those fields which were more easily accessible, and upon which operations were less dangerous to life.

Clinical and experimental studies upon this organ during the past decade have demonstrated that operations upon this tissue can be made without great risk, even large portions of the liver being removed without destroying life. Among the dangers to be avoided when considering surgery upon the liver are shock, hemorrhage, embolism, and infection. The functional capacity of that portion of the organ remaining after operation must be sufficient to supply the demands of the organism.

Of the conditions mentioned, we will first consider shock. The usual methods for the prevention of shock must be employed, although in the writer's experience in the absence of hemorrhage and with the exception of occasional respiratory interference during manipulation of the organ the amount of shock is not large. In both the experimental and clinical work of the writer it has seemed that shock in operations upon the liver is directly proportionate to the amount of blood lost, and of all the dangers in hepatic surgery hemorrhage is by far the most serious. Hitherto this has been the one chief difficulty to be met.

Here we have a very large friable organ supplied with a great number of blood-vessels passing through a thin delicate con-

nective tissue, this making it likely for the slightest traction upon suture material to cause it to tear through the wound edges. A number of experiments have been carried out by different observers, both here and abroad, seeking to overcome this difficulty. The writer has been impressed with the fact that notwithstanding the great number of experiments made, he has been able to find only one mention of a plan of temporary control, which he has employed with success for some time. Almost the entire blood supply of the liver passes through the right border of the lesser omentum just anterior to the foramen of Winslow. Free bleeding from the organ during operation can be controlled by pressure of the thumb and finger or of a flexible protected clamp. Notwithstanding the fact that Prof. Dr. Garré (of Breslau) says that not much is to be expected from preventive hemostasis in the liver, I have been able to demonstrate both clinically and experimentally that by proper compression of the right border of the lesser omentum almost complete hemostasis during operation can be obtained. The simplicity of this plan of temporary control, the ease with which it can be applied, and the absence of practically all ill effect from its employment make it an ideal practice in these cases. It really is cause for surprise that it has not been generally adopted earlier. With this clamp applied the surgeon can carefully plan his further operative steps without any fear of embarrassing hemorrhage. The lines of operative incision into the liver can be carefully planned and the edges of the same cut in a beveled way as suggested by Auvray and Jacob Frank, which permits the cut edges to fall together without tension, thus favoring hemostasis and also avoiding a raw surface for peritoneal adhesions. It seems reasonable to conclude that the application of the temporary clamp is much superior to Langenbuch's proposal to produce preventive hemostasis by temporary ligature of the portal vein. Serious objection can be offered to the latter proceeding owing to the time necessary for early application of the ligature and the danger of injury to the vessel. Many plans have been proposed for the permanent control of hepatic hemorrhage. It was customary in the earlier operations upon this organ, especially where resection was done, to fix the liver in the abdominal wound, employ the actual cautery for hemostasis and pack the wound with gauze as an aid to permanent control. This method of necessity greatly increased the shock of the operation, left a large field for granu-

lation, and greatly prolonged the convalescence. Another method employed was the use of the elastic ligature of extraperitoneal treatment of the stump. In the writer's opinion, at the present time there is absolutely no indication for the extraperitoneal treatment of the stump of liver tissue.

Kousnetzoff and Pensky have shown that the vessels of fresh human livers are no less resistant than arteries and veins of similar caliber in other portions of the body, and that their walls are of sufficient firmness for isolated ligature. Auvray confirmed their results and demonstrated that hepatic vessels because of their elasticity could be drawn out from the cut surface of the liver to the extent of 1 centimeter—an additional evidence of the possibility of safe ligature. The blood pressure in the liver is never so high as in the main arterial circuit, and therefore coagulation should be more prompt here than in other portions of the body. In our animal experiments we have found this to be the fact. The method employed for hemostasis by Kousnetzoff and Pensky consists in applying ligatures en masse in a continuous row so that no free tissue remains between them. The threads when drawn taut crush the parenchyma but the vessels resist. This method has been modified by Auvray and both his plan and the one preceding seems to have followed that of Bonanna published in 1890.

In applying the sutures according to the methods above mentioned, the author has found the use of a large size (No. 3 or 4) catgut quite satisfactory, inserted by means of a blunt needle carrying a double thread. Even if the ligatures cut into the liver tissue slightly, the larger vessels hold and there will be no great amount of blood lost. It was formerly the custom to place gauze upon the liver tissue and tie the ligatures over it to prevent them cutting into the tissue. This necessarily called for drainage in the abdominal wound so that the gauze could be removed. We believe that this is no longer necessary. It is not necessary to put very great pressure upon the sutures in tying, in fact it is inadvisable. Prof. Dr. Garré prefers fine silk threads (No. oooo, Pearsall's) for direct ligature of the vessels and claims that he has found no disadvantage from their use. For the deep sutures which pass through the whole thickness of the liver, he prefers thick catgut (No. 2) because he considers thick firm sutures more correct, and because he has a general dislike to burying large silk threads.

With Garré, I believe the cautery to be unsafe in hemorrhage

from the large vessels, since it causes considerable loss of time to the operation and loss of blood to the patient. This method, as well as the steam spray of Snegirew and the hot-air method of Hollander, causes necrosis, necessitates leaving a raw surface, is followed by sloughing with the danger of embolism and secondary hemorrhage, therefore it is to be condemned.

Briefly, the operation as we believe it can be best performed, is made as follows:

Through an incision, abdominal or costoabdominal as indicated, the liver is brought into the field, the clamp applied to the vessels and the incision made into the liver in a beveled manner so that the flaps can readily fall together. All open vessels are tied with either very fine silk or catgut, preferably the latter. The beveled flaps can then be approximated by through sutures of large catgut, as described above. The edges of the wound are to be closed with a continuous suture of fine catgut. The clamp is allowed to remain a few minutes after the suturing is done, while the edges are compressed with hot gauze pads. It is then gradually loosened, the pads removed, and the abdominal incision closed without drainage. This seems to me to be a satisfactory and ideal method for the removal of liver tissue.

With reference to the functional capacity of the organ experimental investigations concerning this point have shown that in animals at least one-half of the entire structure of the liver has been removed without causing death. Dr. Ponfick, at the Nineteenth Congress of the German Society of Surgery, 1890, reported from physiological experiments that one-half of the liver can be removed in rabbits without causing any apparent change in the animal. A certain number of animals died after three-fourths of the liver had been removed. He noticed that the lost liver substance was little by little reproduced from the capsule. This he was able to demonstrate from the specimens. The reproduction was very rapid. In eight days after removal 80 per cent. of new tissue was found. Dr. Gluck reported to the same Congress the results of his work upon the subject as follows: "Ligature of the portal vein in the rabbit causes fatal convulsions. One-half of the liver may be removed without danger to the life of the animal, hence resection is justifiable. If both lobes of the organ be removed death follows in from four to five days."

In the management of contusions of the liver operation is only indicated by severe shock which is presumptive evidence of rupture of the liver or the gall-bladder. In the treatment of con-

tused wounds, rupturing the liver surface, with irregular ragged edges, there is great danger of embolism as well as hemorrhage. Therefore it is good practice to trim away ragged portions of the liver and employ the same methods of hemostasis that are used in incised wounds. Embolism can scarcely be avoided in some cases of contusion or gunshot wounds of the liver, since fragments of tissue may be almost immediately taken up into the large venous channels. In gunshot wounds I have found gauze packing to be efficient in the control of hemorrhage but have thought that it rendered an embolism more likely to occur, and I now employ it only when surrounded by rubber or guttapercha tissue, so that no tearing of the liver substance will occur upon its removal.

Multiple abscesses offer but little field for surgical interference with our present knowledge, although a few cases have been reported by Davis and others in which the liver has been freely incised and packed, opening as many abscesses as possible. A case reported by Treves recovered in which little was done beyond exploration. It would seem that most satisfactory results would be obtained in this class of cases by the employment of serum therapy. Solitary abscess, on the contrary, should be subjected to prompt incision. In my experience the two-stage operation is unnecessary since by careful packing the peritoneal cavity can be thoroughly protected. After evacuation of the contents of the abscess, dry sponging has given better satisfaction than irrigation. These large cavities are packed with gauze to control bleeding, and gauze is also used to wall off the peritoneal cavity. It can be removed after thirty-six to forty-eight hours and further drainage be obtained by large rubber tubes. A very important consideration in this connection is the direction of attack in these cases. Three general routes are offered to the surgeon, abdominal, transpleural and the combined abdominal and thoracic route. Most cases will be accessible to a well-planned abdominal operation, therefore the other methods should be employed only in exceptional cases.

Hepaptosis.—A large number of patients suffering from prolapse of the liver have Glenard's disease and should receive general treatment for that condition. A number of operations have been proposed for the relief of hepaptosis. The most satisfactory consists of shortening the suspensory ligaments, fastening the margin of the liver to the parietal peritoneum and attaching the gall-bladder to the upper angle of the wound. Depletion of the liver by catharsis is a useful aid in obtaining relief.

Tuberculosis is a rare affection of this organ and is usually part of a general miliary tuberculosis; rarely, however, a solitary focus exists resulting in a tuberculous abscess which may be relieved by incision. Mayo Robson reports such a case in which two years subsequent to operation the patient was in fine health. The treatment consists of incision, the removal of the fluid and caseating masses and the application of 1 to 500 solution of tincture of iodine or pure carbolic acid followed by alcohol. Drainage should be obtained as in a simple abscess.

Fig. 1.

The clinical aspect of actinomycosis is that of simple abscess. The diagnosis is somewhat difficult and may be confused with tuberculosis and syphilis, but may be made by finding the characteristic ray fungus in the discharge or tissue. The value of iodide of potassium in very large doses has been well established in these cases. Bevan recommends internal administration of cupric sulphate in doses of one-quarter to one-half grain three

times a day. He advises the irrigation of the abscess cavity with a 1 per cent. solution of the same drug.

Syphilitic tumor of the liver occurs with sufficient rarity to make the reports of isolated cases of considerable interest, and therein may be found the principal reason for recording the following:

On March 14, 1911, Mr. S., aged thirty-six, came to me with a very large growth in the upper abdomen, with the following history: About nine years ago he had a syphilitic genital sore for which he was treated a short time, *i.e.*, only until disappearance of the symptoms. He then remained comparatively well until eighteen months previous to consulting me, at which time he observed an unusual fulness in the abdomen. This was unaccompanied by either nausea or vomiting, and gave him little discomfort. No blood was observed in his stools, his bowels moved regularly, his urine remained normal, and during this time his appetite was unimpaired, in fact he had been a voracious eater.

Six months after the first appearance of this abdominal mass a celiotomy was performed in another city. The surgeon found a growth upon the left half of the liver, with a broad base, about 3 inches in diameter, and abandoned the operation believing the neoplasm to be cancerous. Following this operative intervention, growth of the mass has been steady, but notwithstanding the presence of the constantly enlarging neoplasm the general health of the patient had not deteriorated, on the contrary his weight has steadily increased.

On examinasion of the abdomen I found a tumor extending from the ensiform cartilage downward to the umbilicus, and laterally about 4 1/2 inches on each side of the median line. In the median line the mass gave to the abdomen a marked prominence, as will be observed by the illustration herewith presented. This mass moved with the liver in excursions of respiration, was dull on percussion and slightly nodular; pressure over the tumor caused the patient but little discomfort. He complained, however, of some inteference with respiration. Laterally the mass showed slight mobility. Other portions of the abdomen seemed to be normal, no ascites being present, nor was there any marked enlargement of the superficial abdominal veins. Analysis of the urine showed this secretion to be normal.

The man presented none of the usual glandular enlargements of syphilis, but inspection of his buccal cavity showed a small

ulcer on the mucosa just at the junction of the hard and soft palates—a typical syphilitic lesion.

Under the circumstances I considered this a rare and interesting case: Here was a man who had been operated upon one year previously and had been told that he could not live very long, that the neoplasm was probably malignant. A year later he presented a much improved condition of general health notwithstanding the persistent increase in the size of the tumor.

Among the possible causes of such a condition might be mentioned hydatid cyst, benign tumor, sarcoma, carcinoma, syphilitic granuloma of the liver. It seemed justifiable to exclude the possibility of hydatid cyst by the absence of any history of tapeworm, and from the fact that the tumor was solid and showed no tendency whatever to fluctuation. The conclusion that the neoplasm was not a sarcoma was justified by the fact that a sarcoma growing to the size reached by this tumor would have caused marked anemia and cachexia, and certainly there would have appeared some interference with the functions of digestion and assimilation. The same may be said of carcinoma. A carcinoma reaching this size would almost certainly have been followed by marked glandular enlargement, which is of itself quite distinctive. It appeared, therefore, that the condition was either a benign tumor or syphilitic enlargement of the liver. It was unlikely that a benign, nonsyphilitic tumor would develop to the size reached by this mass within the time which had elapsed since the growth was first discovered.

I had never before seen a syphilitic growth of the liver reach this size. In my previous experience gummata were usually small and caused a general enlargement of the liver rather than a circumscribed tumor. Dr. R. Hayes Davis kindly made a Wassermann test for me in this case, which proved to be negative, and a similar report was made by Dr. Cyrus W. Field. This negative reaction, however, did not seem to contraindicate the possibility of this growth being syphilitic, since D. M. Coplin in an article appearing in the *Journal of the American Medical Association*, December 3, 1910, makes the statement that in three cases of tumor of the liver two showed positive and one negative Wassermann reaction. Therefore the negative reaction in this case was not a positive indication that the patient has not a syphilitic tumor of the liver.

This patient was presented to the Jefferson County (Kentucky) Medical Society about two weeks after his first visit to me, during

which time he had been under active specific medication commencing immediately after the Wassermann test was made. At that time there seemed to be a slight diminution in size of the growth. This treatment has been continued for about twenty months, until now (December, 1912) the mass has gradually diminished until it has entirely disappeared.

Treatment.—In the treatment of syphilitic disease of the liver, the writer believes that operative interference is demanded only in rare instances, because the natural tendency of lesions of this character is to diminish and finally disappear following the administration of a vigorous antisyphilitic treatment. Therefore operation should only be advised after such a course of treatment has shown only moderate improvement and where final disappearance of the mass does not take place. At such time the neoplasm is largely composed of fibrous tissue and causes discomfort to the patient from its pressure effects alone. When such a condition presents, surgical interference is justifiable, and from the number of cases recorded, some sixteen as far as the writer has been able to note, operative results have been very good. The operation to be employed is the one previously described.

Cirrhosis of the liver, for a long time looked upon as a somewhat hopeless affection, has attained surgical importance since the suggestion of Talma that it might be relieved by establishing a collateral circulation through adhesions formed between the abdominal viscera and the parietes. Morrison, acting independently, had about the same time performed two operations and presented to the profession the first successful case of operation for this condition. Originally operation was proposed solely for the relief of the ascites incident to the hepatic disease, and for the most part this is at present looked upon as the indication for its employment in this affection. The direct mortality of the operation is at present not very high. Dr. H. H. Grant, who has made the most recent report upon this subject, has collected 144 cases, with a mortality of 11 per cent.; improvement 44 per cent., and of cures 11 per cent.

Hydatid Cysts.—This affection resulting in the presence of echinococcus in the liver is fortunately very rare in this country. Ferguson of Chicago has probably seen more of these cases than any other surgeon. The ideal method of treatment of this condition consists in enucleation of the cyst as recommended by Knowsley Thornton. After exposure of the liver and the protection of the abdominal contents by gauze packing, a trocar

is inserted into the cyst and the fluid contents are evacuated. An incision is now carried through the substance of the liver, some operators employing a blunt instrument, or a cautery, for this purpose. The cut surfaces of the liver are protected as well as possible by gauze. The cyst walls are then separated from the pseudocyst by blunt dissection. Hemorrhage following this procedure is not severe. When the cyst wall has been removed the cavity remaining should be obliterated by suturing with catgut, and the liver wound and that in the abdominal wall closed without drainage. Some operators deem it wise to employ drainage in every case, owing to the escape of bile-stained fluid from the liver wound, which sometimes occurs. Drainage should always be employed when the operator is unable to remove the entire pseudocyst wall. We believe this operation to be the best one for relief of this condition, although some prefer to make the operation in two stages, attempting to protect the peritoneal cavity prior to incision into the liver.

Hepatic Tumors.—It has only been within the last two decades that tumors of the liver have been considered at all accessible to surgical attack. It is only a very small percentage of tumors affecting this organ which are primary growths. The pathology of these tumors is not well understood, in part because of their rarity and to some extent due to the difficulty of diagnosis. Clinically they may be divided into benign and malignant growths. Of the benign growths angiomata are probably more frequent than any other. It is sometimes accompanied by varicosity of the vessels in the falciform ligament. The writer some years ago met a most interesting case of this character. These angiomata usually do not reach a large size, have a cavernous network of vessels and belong to the class known as plexiform angiomata. They rarely cause much disturbance and in many instances they are only observed at operation done for some other condition.

Other benign tumors of the liver, adenomata, fibroma, endothelioma and myoma deserve mention. Lipomata occur so rarely, there is some doubt about their existence. Adenomata may be single or multiple. The single tumors may be derived from the liver cells, from the intrahepatic bile ducts, or from adrenal rests. Some of the adenomata developing from the bile ducts may become cystic and reach considerable size.

Dr. W. W. Keen reports the removal of a cystic adenoma of the bile ducts which he removed from the right margin of the

liver in 1892. The patient made a good recovery and five months later remained in perfect health. In 1899 he reported three personal cases and collected from the literature seventy-four cases which had been performed up to that date, sixty-three of which recovered and eleven died, a mortality of 14.9 per cent. Cause of death in the fatal cases has been shock, hemorrhage, and exhaustion eight; septicemia two, and pulmonary embolism one.

Prof. E. Triconi in 1895 reports the case of a man, aged twenty-seven, in which he extirpated the entire left lobe of the liver for adenoma originating in the bile ducts. After resection of the ensiform cartilage and division of the coronary and triangular ligaments, as well as the rectus muscle, that portion of the viscus containing the tumor was drawn without the abdominal wound which was sutured. The neoplasm was compressed by means of elastic tubing and metal loop, and necrosis brought about. On the eighteenth day, after the application of a segmented suture above the ligature, the tumor was separated with the knife; cicatrization occurred on the ninety-sixth day.

Primary malignant disease of the liver is of very rare occurrence, while, according to DaCosta, secondary carcinoma and sarcoma form 96 per cent. of all liver tumors. These secondary tumors are in almost every instance inoperable from the onset. The only form of secondary carcinoma which is amenable to excision is that class of cases which follows gall-bladder disease where beginning cancer of the gall-bladder has extended into the liver tissue, and here, too, only early recognition and prompt excision offers the patient any hope. In the experience of the writer even primary forms of carcinoma of the liver are not at all hopeful for a permanent cure, yet he believes where the growth is seen early and has not attained too great size excision is justifiable. The writer has operated several times upon carcinoma of the liver accompanying cancer of the gall-bladder, without immediate mortality. A benign tumor which is single and accessible should always be subjected to removal.

THE ATHERTON, FOURTH AND CHESTNUT STREETS.

NEPHRECTOMY FOR POLYCYSTIC CONDITION OF THE KIDNEY.

BY
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Cystic degeneration of the kidney is a rare condition and has apparently been less interesting to clinicians than to the pathologists.

A number of cases have been reported at birth and during infancy but the majority of cases are found between the ages of forty and fifty years. A case eighty-eight years old has been recorded. It rarely ever occurs between infancy and the age of twenty-one.

It is slightly more common in women than in men.

In 98 per cent. of the cases both kidneys are affected. When unilateral, the left kidney is more frequently the one involved.

Heredity seems to play some part in its etiology; Beck has found it in two sisters; Lund in a man whose mother had had the same trouble; Virchow reported a family in which four of six children were affected. Sanger reports a family in which the first, fourth, seventh, tenth and thirteenth children had a bilateral congenital cystic condition of the kidneys, and the other children were normal.

The inherited tendency seems to be toward a faulty development which is not confined to the kidney. We find exstrophy of the bladder, epispadias, atresia and absence of the ureter, vagina, bladder, etc., hare-lip, spina bifida and absence of the extremities.

Moschovitz, Lejars and others found that there was frequently a degeneration of the liver also.

Four theories are given to explain the pathogenesis of cystic degeneration in the adult kidney: (I) That the process is a new growth; (II) that it is the result of inflammation (Virchow) and sclerosis of the tissues between the tubules, the convoluted tubules being the ones most involved; (III) that the process is a malformation and must therefore be congenital; (IV) some hold that it is the result both of a malformation and a tumor formation.

Garceau thinks "The most plausible explanation seems to be that the disease may originate in consequence of embryonic mal-

formation, and that subsequent neoplastic formation takes place."

Lund describes the cysts as follows: The whole organ, both cortex and medulla, is studded with cysts of various sizes, from that of a pin head to that of a mandarin orange. The surface is knobby with cysts of different size and color, brown, red, green, translucent, like windows bossed with varicolored glass making a pathologic specimen of truly remarkable and imposing appearance. The walls of the cysts are thin, vascular, and the larger ones show folds on their inner surface which are the remains of the walls of the smaller cysts, which have coalesced to form them.

The fluid consists of urine, since in it are found urinary constituents, such as uric and hippuric acid, calcic oxalate, cystin, leucin and tyrosin, but in the larger cysts this fluid is considerably diluted (probably by serum which has transuded through the walls), albuminous, and contains blood pigment, fat and cholesterin in varying quantities, so that the color of the cysts may be red, brown, or yellow, and the fluid in them more or less cloudy. Between the cysts are often found more or less extensive areas of normal renal parenchyma; other cysts are separated merely by fibrous tissue.

Symptoms.—It may exist for months or even years without any symptoms. Where both kidneys are involved to such an extent that very little normal kidney tissue remains, the patient remains in perfect health until suddenly he develops uremia and in a short time dies. Arteriosclerosis often causes death by cerebral hemorrhage. Three stages are described by Millward: The first stage, when both kidneys become enlarged, may last for several years and only be discovered by accident. Pain is the chief symptom in the second stage. This may be of a dull aching character felt in the lumbar region or abdomen and may radiate to the iliac region, testes or lower limbs. Renal colic due to passage of blood clots down the ureters may be mistaken for calculus. Some of the pain may be due to hemorrhage into the cysts.

The amount of urine is usually increased with a low specific gravity with a trace of albumin. Blood is usually found microscopically. Hematuria may occur every few months or years and is usually due to some trauma in the lumbar region. This stage may last for years. The third stage is short with symptoms due to decreased elimination of urea, severe headaches, dyspnea, drowsiness, convulsions and coma. The skin becomes yellow

and bronzed. There is marked emaciation and loss of strength. Some cases have a hectic fever and death may be due to anuria and uremia. Ascites, diarrhea, cardiac failure, pulmonary edema, etc., have been noted.

Operative Treatment.—Curtis and Kammerer devised an operation by which the larger cysts are opened and drained and the cyst walls are sutured to the deep fascia.

Nephrectomy should never be done without first exploring to find the condition of the other kidney and then practically only for severe hemorrhage.

Roswell Park did a nephrectomy on a child two years old that recovered and died a few years later from the same trouble in the opposite kidney.

Albarran and Imbert report thirty-four nephrectomies with twenty-five recoveries; of these fifteen were traced—two for seven years, one for six years, four for three years, three for two years, four for one year.

Sieber reports sixty-two nephrectomies; twenty died soon after operation and the others were traced—two for seven years, one for six years, one for five years, four for three years, two for two and one-half years, the others for from five to fourteen months.

Case Report.—Mr. H., thirty-four years of age, was first seen with Dr. W. T. Berry on February 11, 1911, and the following history was taken: His father died at the age of sixty-six of uremia following enlargement of the prostate and his mother at fifty-two of organic heart trouble. His family history was otherwise negative. He had typhoid fever when six years old; malaria for one and a half years when fifteen years of age; has had three attacks of grippe in the past ten years. Five years ago he noticed that the vision in his left eye was almost gone; noticed dark red objects swimming across the field of vision. He was examined by Dr. Bruns of New Orleans who told him that he had had a retinal hemorrhage (this was probably the beginning of the renal trouble or was the first symptom to attract attention). This gradually cleared up and the field of vision on the outer side became fairly clear but on the inner side remained poor. His urine at this time was negative, having been examined by Dr. Shands of Jackson, Mississippi.

He has had periodic attacks of pain on the right side for the past four years; has had some gastric disturbance. Kidney hemorrhage: In August, 1909, after having been out seining all day in the hot sun, noticed some blood in the urine at 6 P. M.

and throughout the night; at 3 A. M. the same night he had a severe attack of pain over the region of the right kidney radiating down to the bladder, which was only relieved by several hypos of morphia. The urine cleared up in twenty-four hours but he was very sore over this region for several days.

The second attack which came on five days ago followed a long ride in a buggy over rough country roads. He had considerable discomfort over the region of the lower pole of the kidney for several days before the blood appeared in the urine. There were some clots but he had no sharp pains. A bimanual examination shows the kidney to be quite tender. The urine voided twenty-four hours later shows some albumin and a few red blood cells; white blood cells, 14,000. *X*-ray shows a slight shadow beneath McBurney's point. A week later the hemorrhage began again and was quite profuse the following day.

On palpation the right kidney seems considerably enlarged and quite tender. We were unable to make a cystoscopic examination on account of a deep seated stricture.

He was removed to the hospital and operated on the following day, under gas-oxygen anesthesia. An incision was made over the appendix, which was in a state of chronic inflammation and was removed. The left kidney was enlarged but was smooth and seemed to be in a healthy condition. The right kidney was at least three times the size of a normal kidney and was hard and nodular. After closing the incision over the appendix he was turned over and the right kidney was exposed through the flank. There were numerous cysts of various sizes and colors and apparently great destruction of kidney substance. After consultation with his brother and several other surgeons who were present we decided to remove the kidney. The kidney when laid open showed the typical picture of cystic degeneration with the greater part of the kidney substance destroyed.

He made a rapid recovery. The urine cleared up in a few days and was about normal in quantity.

He has gained considerably in weight and is apparently in perfect health and has a good color, twenty-three months after operation.

His urine has been examined from time to time since the operation and is free from blood and albumin.

DELIVERY BY THE BREECH, WITH SPECIAL REFERENCE TO TECHNIC.

BY

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(With One Illustration.)

Breech delivery and its technic occupied very largely the minds and pens of obstetricians of the seventeenth, eighteenth, and first half of the nineteenth century. During this time, gradually increasing understanding of the mechanical problems, and of the variations occurring, resulted in many suggestions and directions with regard to the methods of handling these cases.

Mauriceau, Pinard, Levret, Champetier de Ribes, Smellie, Barnes, Veit, Gifford, Wigand, Braun, Puzos, Pugh, Kuvisch, Martin and a host of others wrote on the subject, and described methods whose name is legion for delivery of a woman with the child presenting by the breech.

After 1840, however, the interest aroused by Oliver Wendell Holmes, Semmelweis and Sir James Simpson in the relation of child-bed fever to surgical fever, by Pasteur in the bacterial origin of infections, by Lister and his successors in the application of this knowledge to surgery; the vast strides in general surgery made possible by asepsis and anesthesia; the advances in obstetric surgery brought about by these discoveries, has led the great majority of active and able workers in obstetrics to the newer and more fruitful fields.

To-day the majority of obstetric surgeons are devoting themselves to the fields of Cesarean section, extraperitoneal section, vaginal hysterotomy, pubiotomy, etc., until it seems that the more humble and purely obstetric procedures, such as forceps delivery, version, breech delivery with its complications, etc., were being relegated to the background; unfashionable operations, good enough for the nonexpert, but unworthy of serious study by the more accomplished obstetric consultant and teacher.

Without for a moment wishing to detract from the value of the newer procedures, which are justly the pride of modern obstetrics, I do wish to protest against allowing the new, the brilliant and

theatrical, to crowd entirely from our minds the study of such commonplace things as the indications for version, and the technic of breech delivery and extraction.

The man who develops clever technic in breech delivery will save the lives of more babies than he who can do a good abdominal Cesarean section.

A reduction in fetal mortality from 25 to 30 per cent. to 10 per cent. in these cases is not too much credit to the man who acquires skill in delivery of pelvic presentations.

The delivery of a breech in a multipara with normal pelvis, and relaxed soft parts, requires only sufficient wisdom, to keep one's hands off and leave the delivery to nature.

The art of masterly noninterference is as rare, however, as the art of being a good listener. It is only the master who has enough confidence in nature and in the sufficiency of his own resources, to await the slow development of an ordinary breech.

To correctly handle a case in a primipara with normal pelvis, requires more than ordinary skill. To successfully manage such a case in a primipara with contracted pelvis, requires the best surroundings, assistance, and perfected technic.

Etiology.—Any attempt to enumerate in detail all of the various possible factors in the production of breech presentation, is needless and never completed.

It is necessary, however, to know the underlying principles.

Any fault in size or shape of the pelvic inlet, any abnormality in size or shape of the head, any failure of the uterus to maintain the longitudinal axis of the fetus, in its normal relation to the pelvic inlet, may result in breech presentation.

Frequency.—The importance of the subject is indicated by the fact that in about one in every thirty labor cases, the breech presents.

Prognosis.—Universally accepted statistics give a fetal mortality rate in breech presentations, ranging from 30 per cent. in primipara to 10 per cent. in multipara in general practice.

In expert hands it is of course less. Expert handling involves not only good technic in actual delivery, but fore knowledge and preparation for probable complications.

The prognosis for the mother's life is slightly poorer than in vertex cases, and the outlook for her future health and well-being is considerably worse.

Diagnosis.—The diagnosis must include, presentation, position, size and shape of maternal pelvis, condition of soft parts with

particular regard to dilatability of cervix and condition of perineum, and as accurate an estimation as possible of the size of the child.

Because the latter is difficult does not excuse its neglect. I was recently called to a woman in a breech case because the after coming head could not be delivered; three quarts of hydrocephalic fluid were found. Her physician suspected nothing abnormal. Lack of examination, not lack of knowledge is responsible for the majority of such errors.

The breech not being engaged ordinarily, the length of the child from vertex to buttocks can usually be estimated. The head can be palpated and any unusual size discovered.

The most valuable procedure for estimation of relative size of head to pelvis, as used in cephalic cases, namely, crowding it into the pelvic brim according to Müller's method, is of course impossible here.

This renders careful estimation of the pelvic capacity more important if that were possible, than in vertex presentations where one has the option of other methods after the test of labor.

Here faulty judgment is only proven after delivery of the body, and when six or eight minutes only are left for delivery of the head.

Upon the accuracy of diagnosis not only of the presentation, but of all the factors likely to have a bearing on the ease, or the difficulty of delivery, the life of the child must often depend.

In routine examination, the hard round head above, the high position of the fetal heart, low situation of small parts, and high position of the presentation, are the most conspicuous features. Careful examination should enable any one to make the diagnosis.

Management.—There is neither space nor need at this time for repetition of all the details of management.

The author wishes, however, to bring out and emphasize certain points in which modern methods have enlarged our resources, as well as others which seem to him of special importance.

Management must begin with comprehensive diagnosis. The first problem is whether the presentation as found at the time of examination is probably the permanent one. Many cases presenting as breech six weeks previous to labor undergo spontaneous version, between that time and the beginning of labor. The probability of this occurring diminishes steadily as the date of labor approaches. One must remember the patient's penchant for presenting facts favoring an early date for labor.

Here again, our favorite guide in doubtful cases, viz., lightening, will not be present. Much can be learned by accurate history taking, as well as from the condition of the cervix whose progressive softening and shortening indicates approaching labor. Spontaneous version rarely occurs during the last two weeks of pregnancy.

Having decided that the presentation is permanent unless changed artificially, we must next consider the advisability of external version.

In a multipara with normal pelvis, relaxed abdominal walls and vagina, and lax uterus, external version is usually easy and at the same time of little value.

Primiparity is good reason for attempting it, and a frequent cause of failure in execution.

Justominor pelvis in a primipara constitutes the strongest possible reason for avoiding breech delivery. It involves an extremely high fetal death-rate.

When external version seems strongly indicated, it should be tried under anesthesia to favor the maneuver, and close to labor to diminish risk of return of the malpresentation.

Nor can we consider this usually simple procedure as entirely without risk. The possibility of entanglement of the cord, with consequent disturbance of the fetal circulation, as well as the risk of disturbing the placental attachment by our manipulations, must be considered.

I recently nearly lost a patient from premature placental separation and consequent hemorrhage, apparently as the result of an attempted external version. Ordinarily, if the turning of the child seems to meet with unusual resistance we must desist from the attempt.

Management of Labor.—Unless one is quite sure of an easy delivery, he should make active preparations for complications. A competent assistant is the most important factor in preparation.

The advantage of having the patient in hospital care, and with trained assistants can hardly be overestimated.

Anesthesia at exactly the proper time, help in the technical work of delivery, and above all else skilful suprapubic pressure may be elements which decide for or against the child's life.

I sometimes think I would have better results by turning over the vaginal portion of the delivery to an assistant, and myself conducting the suprapubic manipulations.

Preparation of Patient.—Because of the probability of extensive

vaginal or even intrauterine manipulations particular attention should be paid to the technic of preparation.

Nothing but the most rigid supervision or the development of a true aseptic conscience by the nurse can make preparation of this field anything but a farce.

After watching the average nurse cleansing the anovulvar region, smearing colon bacilli in every direction, I am firmly convinced that no preparation is better than poor preparation of this field.

The anal and vulvar regions should be first cleansed separately, then washed with large quantities of soap and water from above downward, using fresh gauze or cotton wipes for each downward sweep of the hand to avoid smearing the vulva with anal bacteria.

Another point upon which more stress should be laid, is the danger during the vulvar washing of allowing dirty water from the vulva to run through the introitus into the vagina.

Even the operating room nurse accustomed to prepare for gynecological work is likely to permit this, because in her usual work she follows the external cleansing with a thorough scrubbing and flushing of the vagina. The danger lies in the fact that the usual obstetric preparation except for operative work, involves external scrubbing but no vaginal washing. Preparation with imperfect technic is an added risk rather than a safeguard to the patient.

At the first examination after labor has begun, we should investigate the direction of the uterine axis, any tendency to overhanging of the fundus or to excessive lateral deviation should be corrected with a properly padded binder, or with adhesive plaster strapping.

If the cervix or other soft parts promise to dilate slowly a Voorhees bag should be introduced into the vagina. This exerts counterpressure on the cervix, gives support to the finger-like pouch of the amniotic sac, and serves for partial dilatation of the perineum when it is withdrawn.

The prevention of early rupture of the amniotic sac is of considerable importance. It is more prone to early rupture in breech than in vertex cases because of the finger-like shape of the projecting membranes. Its loss is of more importance than in normal presentations because, (a) of the longer time required for cervical dilatation, even under favorable conditions; (b) because of the greater danger of prolapsed cord; (c) because the breech

makes a less perfect ball valve at the inlet than does the head; the liquor amnii drains away more steadily and completely.

Thus by the time the slow cervical dilatation is complete, we are the more likely to encounter spastic uterine contraction, which is here a special disadvantage, because we may at any time have occasion to introduce the hand into the uterine cavity. Care in making vaginal examinations; keeping the patient in the recumbent posture, and placing the bag especially in primipara, as a "point du appui" for the projecting membranous pouch, are all of aid in the preservation of the sac intact.

In the event of early amniotic rupture, if cervical dilatation promises to be unusually slow, the bag should be placed above the internal os, by the usual method for induction of labor.

Early rupture of the sac is more disastrous than in vertex cases, not only because of the absence from the cervix of nature's hydrostatic dilator, but because its usual substitute, the head, is not replaced by the breech, which enters the pelvic brim late.

Cervical dilatation must occur, therefore, if unaided artificially, by the slow process of cervical retraction to and over the presenting part.

The bag acts as a dilator, it also takes the place of the presenting part as a stimulus to vigorous uterine contractions. It should not be forgotten that in cases of pendulous abdomen, the German "Hängebauch," contrary to the usual rule, uterine contractions are more vigorous as well as more effective with the patient in the recumbent position, than when standing.

When such a patient stands not only is the direction of the uterine forces misplaced, but the overhanging of the fundus, allows the presenting part to lift up out of the cervix and thus the natural stimulus is again lost.

In the care of a hypersensitive nervous woman, with painful but ineffective first stage pains, after all mechanical factors have been attended to, the administration of 1/8 grain of morphine sulphate by hypodermic, or 25 to 30 grains of chloral hydrate by rectum, frequently is of material aid in securing cervical dilatation.

There is no question that in a properly selected case, where the effectiveness of the uterine contractions is being reflexly inhibited, dilatation goes on more rapidly and with less pain after the exhibition of one of these remedies.

Pituitrinis better reserved for the second and third stages, particularly in view of the probable exhaustion of its effects after one repetition.

Error is so frequently made in determining the extent of cervical dilatation that a word on this point seems in order.

One or two fingers applied to any one point of the cervical rim, simply pull it toward the pelvic wall of that side, and give the impression of more dilatation than actually exists.

The test should be made by trying its actual diameter with two or more fingers. Moreover, this should be done during the height of a pain when the circular form of the cervical rim is preserved.

Inasmuch as complete cervical dilatation is so necessary to success in these cases, more than usual care should be taken, that no error should be made with regard to its condition.

The cervix being completely dilated, if the pelvis and child are normal engagement will occur.

The bitrochanteric diameter is the master diameter of breech labor, and controls its mechanism.

In full breech before engagement the tibiosacral measurement is greater than the bitrochanteric, but it is compressible while the bitrochanteric is not, consequently in both complete and frank breech, the latter is the largest effective diameter.

In vertex delivery the movements of the occiput are used to describe the labor mechanism. It is at one end of the master diameter of cephalic presentation, the sagittal diameter.

In breech, the sacrum whose movements are used to define the position of the fetal pelvis, is not at one end of the master diameter, but at one end of a line perpendicular to the master diameter.

This is the occasion of much confusion in the mind of the obstetric novice, because as the anterior trochanter rotates under the pubes, the sacrum (used to describe the position) is rotating from an anterior oblique to a transverse position.

Normally, during the descent and delivery of the breech, the obstetrician's only duty is to watch the condition of mother and child, particularly the latter; bearing in mind, however, that the presence of meconium is not the danger signal that it is in cephalic cases.

We will suppose that the patient is a multipara with well-relaxed outlet. She is placed across the bed as the breech approaches the outlet, the assistants are instructed as to their duties, and a waiting policy is pursued, or nothing more than some manual pressure exerted per abdomen during the pains.

The cord is examined as it appears, loosened by traction on

the placental end, placed where least subject to pressure and its pulsations watched. As the scapulæ appear, the arms which are folded on the chest are delivered with a finger, then with the child astride one forearm, the finger is placed in the mouth or against the superior maxilla, diagonalization as well as flexion of the head assured; the assistant makes suprapubic pressure, the child's body being brought up between the thighs to a vertical position as final delivery of the head occurs.

As fast as the fetal parts appear they should be covered, and unnecessary manipulations of the baby should be avoided in order not to stimulate attempts at respiration. As soon as the mouth appears it should be swabbed free of mucus.

Complications.—A breech delivery such as described is practically a normal delivery. It is in foreseeing, preparing for, and meeting the numerous complications of pelvic presentation, that mastery of technic is of the utmost value.

Painstaking care in diagnosis is essential to correct treatment.

We will follow the complications in somewhat the order in which they are likely to occur.

High Arrest of the Breech.—This may result from, uterine inertia, primary or secondary; faulty direction of the uterine axis; contracted pelvis; large child; failure of cervical dilatation; pelvic tumor, etc. Extension of the legs in frank breech may cause moderately high arrest.

The treatment of faulty cervical dilatation and primary uterine inertia has already been given.

In high arrest with secondary inertia, sometimes faulty direction leads to overriding of the pubes by the anterior trochanter. This is often remedied by direct pressure on the trochanter externally.

Sometimes it is necessary in frank breech to bring down a leg.

If the liquor amnii has recently ruptured this will prove easy, but if the water has been drained away for some time, and spastic contraction is present, it is often difficult to introduce the hand far enough to seize the leg. Pinard's maneuver for this condition is as follows (Farabuef and Varnier):

Introduce the hand whose palm corresponds to the fetal abdomen; pass the fingers along the belly of the fetus, while the thumb ascends behind the sacrum. Penetrate with the index- and middle fingers along the anterior thigh until the popliteal space is reached. Now press with the index-finger in this space thus overflexing the thigh, at the same time making pressure

on the ham-string muscles. The authors assure us that the foot will fall against the back of the hand.

My own experience is that when the uterus is so tightly contracted as to make the maneuver necessary, the hand cannot penetrate high enough to pass the knee and flex directly, and often space does not permit the leg to fall to the back of the hand.

Fig. 1.

When the Pinard maneuver fails I have several times succeeded by an additional maneuver which has the merit of simplicity once the Pinard grasp has been attained. The hand is already grasping the fetal pelvis, thumb behind, palm in front, with the index-finger pressing the anterior thigh. If pressure in the popliteal space fails to bring the foot within reach, without changing the grasp, rotate the fetal body on its long axis, toward the side of the leg desired.

For Example: Pos. Sacro Left Ant.: The left thigh is to the right and anterior—rotate the anterior trochanter from the right toward the mother's left. (See diagram.)

If it were desired to flex the other leg, popliteal pressure with rotation in the opposite direction would effect the desired result.

The anterior thigh being brought down with the foot outside the vulva, traction posteriorly on it will aid in engaging the anterior trochanter.

Once the breech is thoroughly engaged, *i.e.*, both trochanters through the brim, it is possible if the thighs have not been extended as described above, to hook the fingers through the groins in addition to using pressure from above, to aid in its descent through the pelvis.

I believe this is preferable to the application of the forceps.

The fillet is occasionally of value, but is difficult to apply. Stout rubber tubing makes a good fillet.

Traction should of course be avoided when possible as it favors extension of the arms. When used it should be applied during uterine contraction and simultaneously with suprapubic pressure.

Unless the vaginal outlet has been thoroughly relaxed by previous labors, I am accustomed to supplement the bag distention of the perineum, by thorough manual stretching, with the index- and middle fingers of both hands; as complete perineal relaxation is essential to speedy release of the arms, when extended.

Not only does this preliminary stretching done at leisure, make possible more rapid lowering of the arms, but it aids in preventing the severe perineal lacerations so often occurring in primipara during that procedure.

Release of the Extended Arms.—The body being born to the scapula, it is necessary to be sure the arms are not extended. Two fingers suffice to bring them down if in normal position.

If not, they are extended alongside the head and their rapid release is indicated. Time is only wasted by attempting to deliver the head with the arms *in situ.* The maneuver usually described for lowering the arms is undoubtedly the best in most cases, viz.:

Begin with the posterior shoulder, swing the fetal body up toward the opposite maternal groin; pass the hand whose palm corresponds to the fetal back, over the dorsal surface of the scapula and upper arm, to above the elbow, then applying the fingers flatly, flex the child's forearm over its face. This arm released,

grasp the fetal body (not legs) rotate the other shoulder posteriorly and repeat the process. One is always thankful for a thoroughly stretched perineum when attempting this procedure.

In spite of the usual success of this maneuver it occasionally happens that the arm although extended is nearer the face than the occiput. This being the case and the dorsal method of passing the hand proving difficult, because of lack of room, one can pass the opposite hand along the fetal abdomen (more yielding than the back) and often find more room beside the narrow face to insinuate the fingers and reach high up for the forearm than can be found dorsally.

If, one arm being released, the other is found back of the neck this is probably the result of artificial rotation used in releasing the first arm.

Locate the chin as for Mauriceau's maneuver. This will indicate at once whether there is already axial torsion of the neck and will show, whether the head and body of the child or the body, only, should be rotated in the attempt to release the arm.

Always rotate the shoulder involved toward the child's back, in other words untwine the arm from the neck by rotation of the child.

Preliminary pushing of the entire body a little upward and toward the mother's abdomen will loosen the head and arm at the brim and facilitate the procedure.

The arms being released, the head must be brought through the superior strait into the pelvic cavity.

Probably nowhere in obstetrics does complete knowledge of the mechanism bring more satisfactory results.

Champetier de Ribes has described a method for securing flexion and engagement of the head in simple flat pelvis.

The principles described by him are, however, equally effective in normal pelvis with large head, and consequently should be applied whenever the engagement of the head offers difficulties.

Flexion of the after-coming head, applied to the superior strait directly transversely, may be hindered by three prominences striking the pelvic brim, viz., (*a*) malar bone, (*b*) anterior parietal protuberance, and (*c*) mastoid process. This is overcome by "diagonialization," *i.e.*, placing the sagittal diameter of the head in an oblique diameter of the superior strait. Now flex the head, and push it as far as possible to the side of the pelvis toward which

the occiput points. The diagonalization releases the malar prominence and permits flexion; flexion brings a shorter cephalic axis into play at the brim, thus making space, at the occipital side, toward which the head is pushed. This brings the posterior parietal protuberance to one side of the promontory instead of directly against it.

This maneuver is accomplished by the French through vaginal manipulation of the fetal head.

Actually once the head is diagonalized, a properly trained assistant can accomplish the remainder by simply maintaining pressure over the anterior portion of the head and at the same time pushing it toward the occipital side of the pelvis.

Good assistance in this maneuver is essential.

Simply spreading out the hands and making pressure in the direction of the pelvic inlet, as so commonly advised falls far short of what can be done.

The head should be definitely flexed by pressure over its anterior portion; then while flexion is maintained, pushed toward its own occiput.

Another point in securing engagement especially if the pelvis is a little flat is the deliberate canting of the parietal eminences through the brim; first the posterior by traction as far forward as possible, then the anterior, by traction as far posteriorly as possible.

This corresponds in mechanical principle to the method advocated by Gillespie for forceps delivery in cephalic presentations in flat pelvis.

The value of the Walcher position in slightly increasing the antero-posterior diameter of the inlet should not be forgotten when attempting to engage the after-coming head.

The patient should be on a table so that traction in the line of the axis of the pelvic inlet may still be made.

With the patient in the Walcher position this direction is almost straight down.

In hospital practice the Walcher-Trendelenburg posture as described by Edgar is easily obtained and renders the principle of thigh pelvis extension easy to adopt, and permits convenient line of traction.

The head being through the superior strait may still be retained by an incompletely dilated cervix.

Of course the proper treatment of this is prophylactic.

Frequently, however, in spite of all our efforts, the incom-

pletely dilated cervix grasps the neck and retains the head. If direct traction fails to release it three methods are open to us.

The cervix may often be brought into plain view by a little traction, its tense rim very evidently the only obstacle to completion of the delivery.

(*a*) The child's body may be held by an assistant who continues moderate traction while with the index- and middle fingers of both hands, the operator does rapid manual dilatation. This may succeed if only a little more room is needed, to allow the head to pass.

(*b*) If the cervix lacks considerable of complete dilatation, two or three fairly deep cuts with the scissors will permit extraction after which the incisions may be repaired. The incisions are best made with the cervix exposed to view.

(*c*) Instead of manual dilatation if one finds nearly enough room to pass the head, the child's body may be raised to a vertical position, and the forceps applied. A short Elliot or Simpson model is best for this purpose. The head should be in the pelvic cavity before their application. The contracted cervix does not hold the head at the brim but in the cavity.

Application of forceps beneath the child's body is better than above it, because it permits the blades to pass as they should along the mentooccipital diameter of the head. Flexion of the head is easily maintained by the forceps when thus applied.

This is in my judgment the only indication for the use of the forceps on the after-coming head.

The field of pubiotomy in vertex presentations has been decidedly restricted in the opinion of most obstetricians by the circumstance, that with hospital surroundings one can give his patient a considerable test of labor for engagement of the head and still be free to do a Cesarean section.

In breech cases this is of course impossible. So far as regards Cesarean section for contracted pelvis in breech delivery one must lose or save his baby according to his judgment at the beginning of labor. If section is to be done at all it must be done before any labor test or any accurate estimation of the head has been made.

In suitable cases, carefully selected, one can, however, prepare for pubiotomy and place the saw; if reasonable efforts fail to pass the head, one minute will suffice to cut through the bone when the head can be delivered.

This is about the equivalent of allowing a test of labor in vertex cases.

Accurate diagnosis of the size and shape of the pelvis by an expert, is of course a prerequisite to this procedure. Complete cervical dilatation must also be assured or the child may be lost in spite of the pubic section.

Placing the saw, if section of the bone proves unnecessary should involve practically no risk for the mother.

In a pelvis whose true conjugate is 8 cm. or below, with average size baby, primary Cesarean is probably preferable.

Prolapse of Cord in Breech.—This complication is not extremely rare and means a great risk to the child. Replacing the cord if a long loop has prolapsed has not been successful in my hands. If the cervix is fully dilated, rapid extraction is indicated. If the cervix be only slightly open and reposition fails, two procedures offer. With a multipara with capacious pelvis, and relaxed soft parts, and providing the cervix can readily be brought down by traction, vaginal hysterotomy followed by immediate extraction is the best procedure.

In a primipara, or with a small pelvis, or with a cervix not readily brought down by traction, abdominal section is the rational procedure.

Hemorrhage.—The frequent prolongation of labor, producing uterine exhaustion increases the risk of postpartum hemorrhage from uterine inertia. Too frequently the fear of postpartum hemorrhage appeals to the practitioner as an indication for haste in the delivery of the placenta.

This leads to premature kneading, manipulation, and even Credéing of the uterus with the result of precipitating the feared bleeding.

Bleeding from the site of uteroplacental attachment cannot take place until at least partial separation has occurred. An exhausted uterus whose placental attachment is intact as indicated by absence of existing hemorrhage, should be let alone.

Merely follow it down with the palm of the hand and observe its condition. A period of rest will restore its power as well as its ability to respond to stimulation. Kneading and manipulating an exhausted uterus if it accomplishes anything, simply means mechanically separating the placenta in part or completely from a relaxed uterus, unable to contract well in response to stimulation. Time for rest means recovery of tone, means increased response to stimulation, as well as that retraction

of the uterine muscle fibers upon which we must depend for permanent control of postpartum bleeding.

The rapid emptying of the uterus, and the vigorous abdominal manipulation through the uterine wall, in breech extraction, both favor partial separation of the placenta before uterine retraction. Hemorrhage due to this cause may occur directly after delivery, and indicates immediate extraction of the placenta.

Deep cervical lacerations with consequent bleeding are much more common after a rapid extraction, than in ordinary labor. The differential diagnosis should be made before instituting treatment.

Injuries to Mother and Child.—After breech delivery because of the frequency of severe cervical laceration one is justified in exposing the cervix seeking lacerations, and repairing at once any damage found.

The numerous intrauterine manipulations may make justifiable in breech cases, another procedure that is unjustifiable in most deliveries, viz., the postpartum intrauterine hot saline douche.

I have seen all degrees of damage to the child in breech deliveries. Separation of the head from the body by unjustifiable force, cervical dislocation, demonstrated by palpation of the posterior pharyngeal wall, etc. This accident probably most frequently occurs, when traction is made on the twisted neck. Whenever traction is made to engage the head or pull it through the cervix, first locate the chin. It is the guide to the correct position of the shoulders during traction.

More common and likely to occur even to an expert operator, are fracture of clavicle, breaking of an arm, or injury to the leg during efforts at rapid delivery.

The frequency of injury to the child renders a critical examination necessary after breech delivery. Among the later results, to the fetus may be mentioned aspiration pneumonia, and convulsions or paralysis due to cerebral hemorrhage, or to traction on nerve trunks.

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THE TOXEMIAS OF PREGNANCY.

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At the outset, I would disclaim any originality in the treatment of this most interesting topic; my chief excuse for bringing it to the attention of this society being the obscurity in its etiology and pathology, and its comparative frequency. No more serious and apparently hopeless clinical pictures could present themselves to the practitioner than a typical attack of puerperal eclampsia or a case of hyperemesis gravidarum, two of the most distressing manifestations of the indefinite clinical condition, the subject of this paper.

The study of the toxemias of pregnancy has been ineffectual in bringing about a unanimity of opinion as to their etiology though a number of attractive theories have been advanced. To show the diversity of opinion in regard to the etiology of these toxemias, the following quotations are made from the writings of well-known authors:

Dorland, in his text-book mentions the following theories: Lever's theory, the pressure or mechanical theory; Halbertsma's theory, a modification of the pressure theory, he attributing the condition to the compression of the ureters by the gravid uterus; Tyler Smith's theory, that the albuminuria was a direct outcome of the sympathetic irritation of the kidneys; Gubler's theory, that it is a superalbuminosis; Blanc's specific theory, which has later been positively disproved; Frerich's theory, that the condition is one of ammonemia, which is the existence in the blood of ammonium carbonate resulting from decomposition of the urea circulating therein; Spiegelberg's theory, that it is a vasomotor spasm the result of renal inadequacy of acute origin, arising from reflex irritation of the uterine nerves.

Hirst claims, "the etiology is still obscure. All that can be said at present is that eclampsia is the result of the retention in the body of substances that should have been disposed of by the excretory organs, namely, the kidneys, but which, owing to the insufficiency of these organs, remain stored up in the body." Playfair states, "We are hardly yet in a position to explain its true pathology with certainty." Parvin says, "the generally

accepted view of eclampsia, is that it is produced by autotoxemia. What these poisons are and what their origin, are questions still unanswered." Warren states, "that many theories have been suggested for its explanation none of which seems to satisfy all of the requirements." Cazeaux and Tarnier claim, "that an irritation of the nerves of the uterus, vagina, bladder, rectum or stomach may become the determining cause of general convulsions."

Edgar classes acute yellow atrophy of the liver, pernicious vomiting of pregnancy, and eclampsia under a general etiology, toxemia, which he defines as "a state of the blood and metabolism arising from the hepatic insufficiency to which the pregnant woman is strongly predisposed."

Grandin and Jarmin give the following etiology, "whatever the prime etiological factor, a secondary factor is uremia, or rather urinemia. In short the preferable descriptive term to use for this condition is toxemia."

Garrigues states that "many theories have been advanced to explain the outbreak of eclampsia, but so far none of them covers all cases."

The important cause, according to Wright, "is the accumulation of toxins within the body, the liver, intestines and kidneys, being chiefly at fault."

Jewett writes, "the last word has by no means been spoken on this question, but this much may be stated with positiveness, that eclampsia does not always depend on albuminuria and kidney change, and further, that albuminuria does not constantly accompany the convulsions."

Williams concludes as follows: "The clinical history and anatomical findings afford presumptive evidence that the disease is due to the circulation of some poisonous substance in the blood which gives rise to thrombosis in many of the smaller vessels, with consequent degenerative and necrotic changes in the various organs. But at the same time we are absolutely ignorant concerning the nature of the offending substance."

Reynolds and Newell claim that "eclampsia is the result of a general toxemia, and is not due entirely to renal insufficiency as was formerly supposed."

Davis describes the toxemia of pregnancy as a condition of autointoxication, with poisons alkaloidal in nature secreted within the patient's body, and probably by the fetus also.

A number of the later authorities have classified the toxemia

of early pregnancy, viz., nausea, vomiting and salivation, with that state known as the preeclamptic condition, and the typical convulsive seizures in the latter weeks of pregnancy. This directs attention to the pathologic condition present in the liver and kidneys as having a direct bearing upon the toxemias in both extremes of pregnancy.

Chief among the advocates of the hepatic rôle in the etiology is Von Frierchs. Shicekle(1) has made an exhaustive study of the liver in connection with eclampsia with and without convulsions, with control experiments on pregnant mice. He concludes that normal pregnancy greatly disturbs the function of the liver. Among the postmortem changes found in the liver of the pregnant are various forms of necrosis, fatty degeneration of and fatty deposit in the liver cells, parenchymatous degeneration, hemorrhages and fatty deposits.

Jurgens and Small(2) describe the hepatic lesions as essentially a thrombosis of the capillaries with hemorrhages and degeneration of the cells at the periphery of the lobule. In pernicious vomiting, the pathology is a fatty degeneration and necrosis of the cells at the center, extending toward the periphery.

In this article by Ingraham from which the above is quoted, reference is made to the impaired glycogenic function of the liver in the toxemias of pregnancy, He suggests the administration of 20 to 50 grams of cane sugar, and when the assimilation is below 1 gram per kilogram of body weight the prognosis is grave and the termination of pregnancy should at once be accomplished.

Although there is a decided unanimity of opinion that the nausea and vomiting in the early weeks of pregnancy, in all its phases and degrees, and the preeclamptic and eclamptic condition of the later weeks, are manifestations of a toxemia, there is just as decided a difference of opin'on as to the identity of the toxins which cause these symptoms. Pinard(3) believes that the toxic element is not the same throughout the entire period of pregnancy. In the earlier months it affects the vomiting center, there is hypotension and an increase in the frequency of the heart's action, while in the latter period of pregnancy the central nervous system becomes gradually involved, with excessive pulse tension and eclamptic convulsions.

The hematoxic theory of eclampsia presents some attractive features. Murray(4) reports three cases dying of eclampsia showing marked signs of a toxin attacking the blood. The part which the placenta plays in forming albuminoid materials and

allowing their passage from one circulation to the other has not been satisfactorily explained nor has it been determined whether these albuminous materials are fetal or syncytial in origin. However, from the fact that on death of the fetus and delivery, the toxemic symptoms are usually relieved, would point to the fetal origin. Another argument advanced by Hirst, in support of the fetal origin, is that in hydatidiform mole with its very large growth of syncyctium, eclampsia is very rare. In Schenck's experiments(5) it was possible to demonstrate toxins in the placenta and to neutralize these toxins by sera.

The organs more or less constantly subject to pathologic changes in the toxemias of pregnancy are the kidneys. The changes in them are not always uniform, but a fatty degeneration is the one constant change. The other degenerations of the kidney which are present in all profound toxemic conditions are present in the pregnancy kidney, but usually more profound in the latter condition.

Schmid(6) (*Zeit. f. Geb. u. Gyn.*, Bd. lxix, H. 1, 1911) gives the following summary of the pathological processes found in the toxemias of pregnancy: "the typical changes in the internal organs in eclampsia are degenerative processes in the parenchyma of the kidneys and especially in the epithelium of the tubules, with production of albumin and fat, and local degenerative necrosis; in the liver, hemorrhagic necrosis with thrombosis of the capillaries and the inter- and intralobular vessels; hemorrhage and softening in the brain, membranes, and central ganglia, with thrombosis of the small vessels; albuminous and fatty changes in the heart muscle and hemorrhage and necrosis of these tissues."

Hirst very correctly calls attention to the fact that kidneys may be diseased and be functionally sufficient, and others anatomically perfect yet insufficient functionally when called upon to do double duty. It is a fact, however, that a diseased kidney cannot be expected to remain functionally perfect for very long, especially if additional toxin is constantly acting upon it.

Williams' ammonia coefficient theory as the cause of eclampsia has many attractive points and a number of warm supporters. Frigeysi(7) and others do not agree that the ammonia coefficient above 10 per cent. indicates toxemia and disturbance of the liver, but ascribes this condition to starvation, the same as shown by the presence of acetone.

Hoatling and Groat(8) have recently contributed practical

articles on this special phase of the subject and lay great stress upon the urinary findings in the toxemias of pregnancy. Hoatling states that the proper examination of the urine will show whether it is nontoxic, whether a case of vomiting is reflex, neurotic or toxic; if a patient in the preeclamptic condition has the toxemic or nephritic variety or whether a case of eclampsia is toxic or nephritic. As to the nitrogenous elements in the urine, the urea nitrogen should be about 75 per cent. and the ammonia nitrogen from 3 to 5 per cent. Groat describes the method of estimating ammonia nitrogen as follows: "only such apparatus as is usually possessed for urine examination and gastric contents analysis, viz., beakers, test-tubes, evaporating dishes, a buret or pipet graduated in tenths of a cubic centimeter, a 1 c.c. and a 10 c.c. pipet, and decinornal sodium hydroxide. Twenty cubic centimeters of urine are measured into a good sized evaporating dish and diluted with water until nearly colorless. A teaspoonful of crystallized potassium oxalate is added, and a few drops of a saturated alcoholic solution of phenolphthalein as an indicator. The whole is carefully neutralized with sodium hydroxide solution until the faint pink of the indicator appears. Five cubic centimeters of commercial formalin which has been neutralized with the sodium hydroxide until it too, with the indicator, just shows pink is added. The color is discharged because the formaldehyde unites with the ammonia to form hexamethylene tetramine, releasing the acids with which the ammonia was combined. Now tenth-normal sodium hydroxide is run in slowly from a buret or graduated pipet until the pink tint reappears. The number of cubic centimeters of sodium hydroxide used when multiplied by 0.0014 gives the grams of nitrogen in the form of ammonia in the 20 c.c. of urine; and multiplied by 50, the grams in 1000 c.c."

Personally I have not carried out this apparently most important diagnostic test as I should have done nor have I learned by inquiry of many in this section who are doing so. Not only should the ordinary chemical tests of the urine of the pregnant woman exhibiting symptoms of toxemia be made, viz., tests for albumin, sugar, and microscopical examination for renal derivatives, but an estimate should be made of the total nitrogen and ammonia nitrogen output. When the ammonia nitrogen reaches 10 per cent. or over, with or without albumin, it should be considered a serious condition and the indications for a termination of the pregnancy carefully weighed.

The result of the study of metabolism as related especially to the ductless glands, would lead to the belief that there is some connection between the urinary changes found in pernicious vomiting and the secretion of the thyroid gland. Ingraham(9) in view of these studies urges a consideration of the use of the glandular extracts in the therapy of the toxemia of early pregnancy.

Another valuable agent in recognizing the development of the toxemias of pregnancy is by the use of one of the various instruments for estimating the blood pressure. Much valuable data has been collected on this subject, Green(10) of Boston in a recent article has referred to the work of Frank and Heimann,(11) Slemons and Goldsborough(12) and Bailey(13) who agree upon the importance of studying the blood pressure as an index of the toxemias of pregnancy. Green further classifies the toxemias of pregnancy as follows, with the blood-pressure index in each.

Type.	Blood Pressure. Before delivery.	After delivery.
A. Eclampsia:		
1. Impending.	Moderate.	Falling.
2. Acute.	High.	Falling.
3. Fulminating.	Extreme.	Rising.
4. Postpartum.	?	Moderate.
B. Chronic nephritis.	Moderate.	Rising or constant.
C. Hypermesis.	Moderate.	Constant.

He has added two groups to this classification, as follows:

1. Postpartum eclampsia, which is a condition of cumulative toxemia in which the resistance of the patient's central nervous system prevents outbreak of symptoms till after labor.

2. Cases of pernicious vomiting, with fairly normal blood pressure, in which the condition progresses to a fatal result, with rising ammonia coefficient, unless the uterus is emptied.

Vomiting.—Three distinct types of vomiting are generally recognized; reflex, neurotic and toxic.

Abnormalities of the generative tract are given as the causes of the reflex type, such as retroversion of the uterus, ovarian cysts, severe cervical tears and erosions.

The advocates of the neurotic form claim that all forms of nausea and vomiting are due to a neurosis and can be corrected by hypnosis or suggestion. While it is true that pregnancy exerts a peculiar influence upon the nervous system, it cannot be borne out in fact that pernicious vomiting with its distinct pathology can be a neurotic manifestation.

It is the last or toxic form with which we are most concerned. The pathology and etiology of this form has already been dealt with.

The vomiting of pregnancy can perhaps still be divided clinically into nausea without vomiting, accompanied by more or less salivation; nausea and vomiting of one but not all meals ingested, and the serious and distressing condition of hyperemesis gravidarum.

It is to the latter condition that I would especially call your attention. In this form the patient, after a period of nausea and vomiting of the second degree, during which there is an increasing prostration out of proportion to the stomach disturbance, begins vomiting not only the nourishment taken, but in between these attacks, with much retching and accompanying prostration. There is a gradual rise of temperature, considerably increased pulse rate with hypotension and profound prostration. The breath has a decided acetone odor, the tongue is dry and the picture is that of impending dissolution. Several cases of this kind have been reported in this city with a fatal ending.

I have under my observation at the present time a patient pregnant for the third time. Each pregnancy has been associated with severe nausea and vomiting, the first developing rapidly into the pernicious form, necessitating a premature delivery at nine or ten weeks. The late Dr. Wm. Bailey was the consultant in this case, and I can recall with what reluctance he consented to the evacuation of the uterus, even when the patient had gone almost beyond hope of relief from any measure. In the second pregnancy the nausea was not nearly so severe, but by confinement to bed for nearly three months, and most careful watching and feeding she was able to complete gestation. She is now pregnant since January 27 and this time, as before, the nausea began almost at the time of conception. A peculiar feature each time has been that the mornings are the best time of the day for her, the most severe vomiting occurring after 5 o'clock P. M.

A recent writer(14) calls attention to the beneficial effects of the artificial Nauheim baths in pernicious vomiting. If all the effects mentioned as due to this treatment are present, it should be of service in this condition, viz., increased oxidation, increased excretion of urine, decrease in arterial tension, slowing of pulse rate, dilation of superficial vessels, stimulation of nervous system and trophic centers of spinal cord, with relief of physical and mental depression.

The term preeclamptic stage is used to represent that condition in which the patient exhibits the symptoms of faulty metabolism and deficient elimination, and may occur at any time during pregnancy, rarely before midterm, and most frequently from the seventh month to full term. Zweifel records one case at the third month.

The patient in the preeclamptic stage generally presents a typical picture. The usual condition of constipation is more marked, the stomach, which for some weeks has probably been functionating properly, is easily disturbed; there is a loss of appetite; nausea may recur; the urine is scanty, though the patient usually believes that because of frequent urination from pressure irritation of the neck of the bladder, a proper amount is being passed; albumin is usually found, with some of the renal derivatives; the ammonia nitrogen is increased; the least exertion is accompanied with shortness of breath and palpitation; headache is more or less constant; there may or may not be edema of the ankles; and as the toxemia deepens, a disturbance of vision is usually present, temporary blindness, blurred vision, etc.

The profession, as a rule, is careless in an examination of the urine of pregnant women, and the preeclamptic and active eclamptic stages are frequently encountered without a previous knowledge of the condition. Patients too often neglect the specific directions in regard to the urine and are themselves responsible for their condition because of failure to report these symptoms to their physician. This is especially true of primiparæ who look upon any abnormality as due to the condition of pregnancy and to be expected. To obviate this difficulty, I have had printed a booklet which I have entitled: "Hints to Expectant Mothers," embodying in it many suggestions looking to the welfare of the patient during pregnancy. This brochure is given each patient whom I am engaged to attend in confinement. Waiting patients are requested to send a sample of urine on the first and fifteenth of each month, and in this way they are more easily examined and kept track of. If these instructions are carefully carried out, many cases of eclampsia could be prevented, because the preeclamptic stage would be more quickly and easily recognized and appropriate remedial measures promptly instituted.

While it is true that eclampsia may occur in cases which have not presented an albuminuria, and conversely there may be an albuminuria present throughout the latter months of pregnancy

without eclampsia; I would emphasize the fact that the presence of albuminuria alone is a danger signal which cannot be looked upon lightly, and is one of the most valuable evidences we have of the preeclamptic stage. Brown (*Jour. Amer. Med. Assn.*), from a record of 54,010 births gathered from statistics and personal observation, thinks that albuminuria is present in fully 80 per cent. of normal pregnancies. It must also be taken into account that a fatal puerperal toxemia may occur in which convulsions and coma are entirely absent. Schmid reports a fatal case in which there was only a slight albuminuria and edema of the ankles, in which the autopsy showed the characteristic pathologic changes in the liver, kidneys and brain.

There is no need in a paper of this scope to refer in detail to the symptoms of eclampsia, but there is one which has been prominent in three of the most recent cases under my observation, and that is amblyopia and amaurosis. Dimness of vision, hemianopia, or complete blindness may be present as one of the first symptoms of the preeclamptic stage, and is one of the most positive of the indications for the termination of pregnancy. The prognosis for a return of vision if this is done is very good, the reverse is true if palliative treatment is undertaken. One of the cases which I saw in consultation at the sixth month of gestation presented a dimness of vision rapidly developing into complete blindness after a few days of altitudinal hemianopia, associated with increasing amount of albumin, and number of renal derivatives in the urine. After premature delivery the sight gradually returned and at the end of six weeks was very good indeed, though the urinary findings were far from normal. A question as to the duration of the amaurosis will certainly be asked, and this is not answered in most text-books. One of my cases totally blind after delivery, had complete return of vision in two weeks; in another blind before delivery, the sight was perfect in about ten days. There were severe convulsions in both cases.

The prophylactic treatment of the toxemias of pregnancy is most important. If patients would but report their condition as soon as they recognized it themselves much more could be done by a regulation of diet, exercise, habits, etc., looking toward proper elimination and lessened chance for autointoxication. Troublesome vomiting of pregnancy—all reflex causes removed or remedied—can best be treated with the patient in bed, elimination, total rest of the stomach, for a shorter or longer period, and, if necessary, rectal feeding, during this time. Lavage of

the stomach may be very beneficial. The very number of remedies suggested for this condition is evidence enough that no drug answers the requirements and I seldom use any but calomel. Rest in bed, careful liquid feeding in small quantities, will give the best results. The suggestion already made to give the glandular extracts should be borne in mind as offering some benefit. With the presence of pernicious vomiting, accompanied by an increase in the ammonia nitrogen coefficient, pregnancy should be terminated at once. The line of safety may be easily overstepped.

With the appearance of any of the symptoms of the preeclamptic stage, the patient should be put at once upon a strict milk diet. This is entirely feasible, in all cases. The treatment should be begun with calomel, no other drug offering the same advantages or results. It should be given in doses of 1 grain, repeated at hourly intervals for four or five doses. After elimination has been produced the calomel should be repeated occasionally in smaller doses. If the edema is at all marked, this should be followed by a saline, repeated until free watery catharsis is obtained. Daily examination of the urine should be made, and with improvement in this, a more liberal diet can be allowed. Free use of water is quite essential. Should the symptoms grow progressively worse and eclampsia supervene, the treatment can be considered under the following heads:

1. The treatment of the patient while in convulsions.
2. Elimination.
3. Evacuation of the contents of the uterus in the quickest manner possible consistent with maintaining the integrity of the soft parts of the mother.
4. The after-care of the patient.

The means at hand for the control of the convulsions, are chloroform inhalations, veratrum viridi, chloral hydrate, and morphine.

It has been conclusively proved that chloroform causes changes in the liver identical with those found in eclampsia and pernicious vomiting. Ewing and Bevan have shown this by animal experimentation. It is also apt to more seriously damage already crippled kidneys. One instinctively turns to chloroform for the purpose of controlling the convulsions, but with this knowledge it should be used most cautiously and carefully, if at all.

Veratrum viridi is an agent of which much has been written, for and against. If given in selected cases, in the plethoric

patient with a full, bounding, rapid pulse it may be an agent of much benefit. It should be given hypodermatically in an initial dose of 20 minims and this repeated at hourly or half hourly intervals of 10 minims at a dose until the pulse has been reduced in frequency, from 120 or more to 50 or 60.

Chloral hydrate is a valuable remedy, and can be administered and absorbed, per rectum, before catharsis is obtained. It should be given in much larger doses than is generally advocated, an initial dose, by this route, of not less than 30 grains, repeated in an hour in a 15-grain dose. This can be combined with the bromides with favorable results.

Much has been said about the use of morphine to control the convulsions and it has many advocates. The routine treatment of this condition at the Rotunda Hospital of Dublin, almost to the exclusion of other remedies is to give heroic doses of morphine. Half a grain is given hypodermatically, and repeated if necessary, in 1/4-grain doses every two hours, up to a total of 2 grains in twenty-four hours (*Journal of Obstetrics and Gynecology of British Empire*, February, 1906.) Under this treatment it is claimed a mortality of only 16.9 per cent. is had. In the light of the pathological changes in the kidneys as a result of pregnancy and in spite of these statistics, I believe the use of morphine to be fraught with great danger, and should be used with extreme caution. Attempts should be made at once to obtain elimination. To this end an initial dose of calomel, of 2 to 4 grains should be given dry, on the tongue, followed, as soon as the patient can swallow, by Epsom salts in a saturated solution. This should be repeated at half hourly or hourly intervals until free watery catharsis is obtained. If swallowing is prevented by the state of unconsciousness, advantage should be taken of the smallness of the dose necessary by giving a drop or two of oleum tiglii. This can be administered with a few drops of olive oil upon the tongue in a medicine dropper and repeated in half an hour or an hour for its effect. If the unconsciousness continues between convulsions, excellent results may sometimes be had in securing elimination, by enveloping the patient in hot packs repeated at frequent intervals until free perspiration is obtained. Pilocarpine, in my judgment, is a dangerous remedy as it has too great a tendency to produce a fatal pulmonary edema which is one of the complications most to be feared. Whipping up the kidney is a measure to be used with great caution, hence, diuretics are not to be considered at this stage.

Venesection can be used in certain cases with decided benefit. In one of my cases 16 ounces of blood were removed with excellent results. If the blood pressure is increased it can be lessened most effectually by venesection. Potocki(15) advocates blood letting of 600 to 1000 c.c. even in the preeclamptic condition, claiming for it more uniformly good results than by any other single method.

If the convulsions are frequent and severe, it must be borne in mind that it is very necessary to protect the patient's tongue from being bitten during the seizures. I have seen quite severe lacerations of this organ by neglect of this measure.

Accouchement forcé in my judgment is indicated in many cases in the preeclamptic condition, and in every case of eclampsia. It should be performed as quickly as is consistent with the integrity of the soft parts of the mother. It is one of the clearest indications in the treatment, the only consideration being the choice of method. If the convulsions are very infrequent, consciousness returning promptly, the slower methods of induction of premature labor, as by the use of the bougie inserted between the membranes and uterine wall, Barnes' bags or the Champetier de Ribe's bag, or the injection of glycerine between the membranes and the uterine wall may be employed. The use of the Champetier de Ribe's bag will probably yield the best results. Rapid dilatation by the Bossi dilator is not advisable because of damage done the cervix.

If the convulsions are so frequent and severe at to make it necessary to deliver promptly, the method advocated by Dr. Philander A. Harris of New Jersey will give the best results. The patient is anesthetized and under strict aseptic precautions, the cervix is gradually dilated first by the introduction of one finger in the os then one by one the remaining fingers are inserted, until the cervix yields entirely. If the eclamptic attack occurs before the cervix has softened enough to permit the introduction of one finger, the deep cervical incisions of Dührrsen can be employed and the delivery then easily accomplished.

Dührrsen writes as follows in regard to his operation (*Surgery, Gynecology and Obstetrics*, March, 1906): "In all cases in which faulty dilatation has to do only with the portio vaginalis, and where a real danger is present for the mother or the child, it is the author's opinion that it is at the present day the duty of the obstetrician who is skilful and antiseptic, to dilate the cervix completely by means of from two to six deep incisions reaching

to the sides of the vagina and to deliver the child. By means of this method we can conduct labor even with a completely closed cervix and even (*i.e.*, in severe eclampsia) in the last weeks of pregnancy."

During the Harris method of dilatation uterine contractions are generally stimulated, and if a vertex presentation is encountered, they may be sufficient to cause engagement of the head, in which event forceps can be applied.

If engagement of the head has not taken place a choice must be made between podalic version and high forceps, and I unhesitatingly recommend a podalic version in preference to the high forceps operation. The latter is an operation which is safe in the hands of only the most expert. It is most difficult to perform and is done at great risk both to mother and child. When done the axis traction forceps should be used. The steps of a version need not be considered here. It should be remembered, however, that the prognosis for the life of the child born of an eclamptic mother is very grave at best; added to this, the additional risk of a breech presentation, the prognosis is much worse, and these facts should be carefully presented to the husband or some member of the family before it is performed.

During the third stage of the labor, much good will result from allowing the escape of considerable blood before maintaining a firm contraction of the uterus.

It has perhaps been noticed that nothing has been said in regard to the use of salt solution. This is a valuable remedy in all toxic cases, but in this condition the heart's action is greatly exaggerated, the arterial tension is very high and an increased volume of blood is not to be desired. After venesection or the uterine bleeding referred to, the saline could be used with benefit, by hypodermoclysis or direct venous transfusion.

In the light of recent metabolic studies as regards the function of the thyroid gland, the administration of thyroid extract, as advocated by Ewing and Nicholson, may prove of decided benefit. Freund(16) has recommended horse serum in eclampsia, claiming that it fulfilled all theoretical needs that were attributed to human sera and the different extracts.

The after-care of the patient consists in maintaining the strict milk diet; free elimination by the bowel; frequent warm sponge baths; occasional use of calomel, for its beneficial action upon the kidney as well as the bowel; and a prolonged puerperium. It is usually best to feed the baby artificially, if it survives, as the

puerperium must necessarily be prolonged, and the milk will be tardy in making its appearance, if at all. Free use of water should be maintained throughout the convalescence.

Mention should also be made of the delivery under gas and oxygen or ether anesthesia by Cesarean section, by the high incision as has been advocated by Peterson of Ann Arbor and Davis, of New York. The rapidity and simplicity of this operation and its freedom from shock recommend it for serious consideration in eclampsia, especially in primiparæ with rigid cervices.

No attempt has been made in this paper to make a detailed report of cases. In a paper on eclampsia read before the Louisville Academy of Medicine in 1906, seven cases were reported with two deaths. Since then I have had under observation five cases with one death. The latter was in a colored hospital patient, admitted in profound stupor, who died in spite of all remedial measures. The remainder recovered perfectly.

To summarize the treatment:

1. Control the convulsions by the following remedies, veratrum viridi, chloral hydrate or morphine.

2. Obtain elimination by free catharsis, by administration of calomel, and salines, or ol. tiglii if swallowing is not possible; diaphoresis by hot packs.

3. Empty the uterus, employing slow methods if possible, if not, by use of rapid manual dilatation and delivery by version or forceps.

4. Bleeding and saline infusion by hypodermoclysis or direct venous transfusion.

5. Maintenance of elimination, strict milk diet and free use of water by the mouth.

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OBSERVATIONS ON THE PRESERVATION AND REPAIR OF THE FEMALE PERINEUM.

BY
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"The woman about to become a mother should be the object of trembling care and sympathy, wherever she bears her burden or stretches her aching limbs. God forbid that any member of the profession to which she trusts her life, doubly precious at that eventful period, should hazard it negligently, unadvisedly, or selfishly."
—*Oliver Wendell Holmes.*

It might be well to preface this paper with the assurance that it is not my intention to enter into any classic discussion of the anatomy and surgery of the female perineum, nor to discuss any one or more methods of technic in common use by obstetricians.

As many Fellows of this society are teachers, and all are prominent in the profession, it seems to me that you are in position to do much good to womankind by impressing upon our colleagues the importance of the preservation and repair of the perineum of the parturient woman. I wish therefore to emphasize a few points which have seemed to me to be of sufficient interest and importance to warrant their presentation for your approval.

In ordinary obstetric practice, laceration of the perineum is in all probability the commonest accident. Williams says, that occasionally you meet with physicians who state that they have delivered several thousand women with one or two or without a single tear of the perineum. Such statements are always erroneous and indicate that the physician has not inspected the parts after labor, and designates as torn only those cases in which the vagina and rectum have been converted into a cloaca, to the existence of which his attention will surely be called by the patient. Davis says, that any man who says that he never lacerated a perineum at childbirth, has either had no obstetric practice, or he does not look for lacerations, or he is not careful with the truth.

Left to nature, lacerations of the perineum are the rule, and any escape under such conditions are the exceptions. On the other hand, in most cases conducted by skilled accoucheurs there is no tear, or the laceration is only through the four-

chette. Thus it is evident that a great deal can be done by the careful obstetrician to prevent lacerations of the perineum.

It is not necessary to impress the average obstretrician with the importance of preserving the perineum, but I feel that the very great importance of careful repair of these lacerations is not always appreciated by many of our friends, both in the profession and among the laity.

One has to spend but a few years in a modern hospital to fully appreciate the long train of woes that follows a neglected laceration; or worse yet, a bungling repair. The most appreciative patients seen at the hospital are those who, having dragged themselves along, suffering from backache, headache, prolapse, loss of bowel control, cystitis, piles, miserable in every way, are sent home strongly rebuilt and as near to the condition that nature intended they should be in, as the present state of our surgical skill can make them.

Many conditions favor the laceration of the perineum. Among these may be mentioned the following: The readiness of the tissues to tear and their indisposition to stretch. This we cannot alter. It is sometimes recommended to lubricate the perineum, but in what way the application of grease to the epithelium can alter the structure of the muscles and fascia has never been explained to me. Herman says, there is no evidence that lubrication does good, but only the opinion of those who use it to the effect that sometimes a perineum is saved which would have been torn if it had not been anointed. It seems to do as much good as the water did when the mother of Achille anointed his heel. As it is impossible to foretell the occurrence or extent of a perineal rupture, the opinion is not based upon substantial ground. Williams says, that greasing and fomenting the perineum is without value. In my own opinion, it is a filthy habit and the danger of infection is one that should be considered.

Next, the size of the child's head; or a much ossified head; or large shoulders. If a live child is to be delivered we cannot alter this. Of course, a faulty position can be corrected if labor has not progressed too far. At this point, I wish to emphasize especially the danger of laceration at the time the shoulders are born. I believe that a very large percentage of tears occur during the passage of the shoulders over the perineum. The accoucheur has skilfully guided the head over the perineum and then feeling safe he disregards the shoulders with the resulting laceration.

The speed with which the child comes through the passage is of tremendous importance and is, in my opinion, the keynote of this discussion. This is the one factor which you can and should control. In fact, the only way to prevent laceration of the perineum is in regulating this by taking care that the perineum is not too suddenly stretched, but is given time to dilate.

In ordinary cases there are three points to attend to in preserving the perineum. First, the presenting part should be allowed to distend the perineum as much as possible. Second, the head should be maintained in an attitude of flexion when delivered. Third, the child should be allowed to escape slowly through the vulvar opening.

One frequently hears the accoucheur blame the consistency of the tissues in excusing himself for a laceration. Many tears could be prevented by retarding the labor by the use of narcotics and anesthetics, thereby allowing more distention of the perineum. Some contend that the use of opiates is injurious to the child. This may be true if these agents are injudiciously used but in the doses commonly used I have yet to find a single case where I regretted the application of such relaxing agents at the time of labor. I do not wish to appear to be sanctioning the use of certain widely advertised nostrums. I can see no reason for replacing our time-tried friend, morphin, with preparations whose merits are best known to those who manufacture them at a large profit. I am satisfied that the reckless use of hyoscin in obstetric practice, has done more mischief than many of us imagine, and that many practitioners have been lulled into false safety by believing the glowing advertisements of these nostrums.

Apart from the conditions referred to, laceration of the perineum frequently occurs through faulty manual or instrumental delivery. In difficult deliveries, the accoucheur, in his anxiety to extract the child tears the perineum with his hand or forceps. We have all seen many cases in which the perineum has been destroyed before the head has come down upon the pelvic floor. Of course, if the life of the mother is in danger, delay is not advised. But these emergencies do not arise as often as some would have us believe. I believe that if a little more patience were used fully one-half of the forceps deliveries would not seem necessary. Too many physicians are willing to sacrifice the future comfort and possibly the life of a woman in order

that they may arrive at the theater in good time. If a practitioner is too busy to give the time necessary for a proper delivery, he should not take the case. He should turn the case over to some man who has the time and is willing to devote it to the particular case under his care. Thus he will be conferring a favor upon his brother practitioner; he will be doing his duty by the woman and the child and he will be setting a good and much needed example to the young men just arriving at their medical majority. I wish that some of these "hurry-up" accoucheurs would read the story of Dr. Rast and conjure over his experiences in the tenements of New York.

It has been interesting to me to note the small percentage of perineal tears occurring in women delivered in our hospital and in other good hospitals. There is a good and sufficient reason for this. The patient is never without attendance; the resident physician or staff etherizer is always within call for anesthesia no matter at what hour they may be needed; the chief nurses are graduates of lying-in hospitals; the nurses are trained in the best methods of preserving the perineum and all necessary help is at hand. If the attending physician is called away, or if labor is very slow and he does not care to sit around for several hours, he need not hurry delivery with the application of forceps but can go to bed or out of the hospital, knowing that the nurses in attendance will use the most approved methods to delay delivery and allow the perineum to distend fully. If perchance the accoucheur does not return in time to deliver the woman, there is always some member of the staff to take his place. Then if a laceration does occur, everything is ready for a careful aseptic repair and the after-treatment is all that could be desired.

The consulting obstetrician seldom applies forceps at the first visit. The first visit is many times the last visit because after advising delay the child is born without the use of forceps. I generally advise them to wait, even if the family and friends are not satisfied, and if after a time consistent with the number of hours already consumed and the condition of the patient and the child, delivery does not take place normally, they call me again and there is always time to apply instruments. When forceps are used the patient should always be under the influence of an anesthetic so that the parts may be thoroughly relaxed.

Various plans have been devised to lessen the tension of the perineum. One is to press the sides of the perineum toward the

center. Try to do this and your fingers will slip over the skin without altering the position in the least. The same applies to the scheme of pressing the hinder part of the perineum forward.

Putting the finger into the rectum to press the anus forward is claimed by most writers to be reprehensible. They claim that not only does it soil the hand so that it is out of service when most needed for insertion into the birth canal, but there is danger of wounding the rectum. They also claim that it does no good, for the perineum must, whatever its position, dilate enough to allow the greatest circumference of the head to pass. I am not in accord with the above views. I believe that at times great good can be accomplished by inserting the finger into the rectum and increasing the flexion of the head, thereby allowing the occiput to slip over the perineum, between pains, with the least amount of damage.

Pressure directly upon the perineum was the plan recommended by the older accoucheurs; and in so far as it retarded the too rapid advancement of the head, it may have done good. Herman says that it could have done good in no other way.

The beginner is to be warned from attempting to protect the perineum by any method that aims at stripping it back over the presenting part. Such a procedure is useless, even if carried out successfully, and often while attempting it the head will suddenly shoot past the hand and cause severe laceration.

Many obstetricians, when rupture seems imminent, advise the practise of episiotomy. Kerr claims that it is difficult to decide when to perform this operation. He incises the lateral walls if the posterior commissure is torn before the head has escaped to any extent. He thinks well of the operation but Williams considers it of little avail and Herman does not mention it in his new book.

In the Vienna hospitals, episiotomy is extensively practised. I have seen the midwives perform this operation many times and with most beautiful results. It is truly wonderful to see these patient attendants, slowly but surely, delivering woman after woman without even a small tear of the perineum. It is not entirely a matter of skill. It is a matter of patience, and careful application of all the little tricks of technic, and the labor is justified by the results. The glory of American surgery is known

everywhere but I am sure that we can learn much from the slow but sure Vienna midwife.

The text-books divide lacerations of the perineum into three arbitrary degrees. The first is a slight tear of the fourchette. The second degree includes those lacerations extending to the anal margin. Those of the third degree include tears through the sphincter ani and into the bowel. The first two degrees are said to be incomplete. Those of the third degree are complete.

We now come to the repair of the lacerations of the perineum. This brings up the question—*when* and *how*—and perhaps, I should add by whom.

Circumstances and the opinions of various teachers have caused the time for repair to be divided into the immediate, mediate, and late periods.

I was taught that no worse crime could be committed than to allow the repair to wait a while. By waiting a while, I do not mean to delay until the patient has arrived upon the "Golden Shore," but within the bounds of the three periods mentioned above. But since I have gleaned some sense from the experience of others and myself, I am at times inclined to believe (with apologies to the Bard of Avon) that he who delivers and runs away may let the woman live to fight another day.

Too many practitioners think that the repair of a perineal laceration consists merely in the sewing of the skin. We must impress upon them that there is a great deal more to this procedure and teach them that it is important to repair the wounds of the anterior and posterior vaginal walls, and thus avoid infection, rectocele, cystocele, and many other complications. The instruments needed for such repair should be found in the armamentarium of every well-equipped practitioner.

Small tears of the first degree can be repaired at once or within a few hours with a few catgut stitches. This procedure can be carried out amid almost any surroundings, without help, and the results will be generally good. The results are not always good, even in hospital practice, as the tissues may be too badly bruised to permit healing by first intention.

Referring to tears extending down to the anal margin and up into the posterior wall of the vagina, circumstances must alter cases. Given a good home, with a good nurse and good light; assurance of good after-care, such as cleansing of the stitches after urination and defecation; under such circumstances I

would say repair at once with catgut aud silkworm-gut stitches. I cannot agree with Williams and Kerr that you will do no harm and may do some good. I have seen much harm done and so have you.

Imagine yourself in a dirty hovel with no competent assistance; no one to whom you can trust the after-care of the patient; poor light; the patient obliged to arise from the bed to attend to the calls of nature; the tissues bruised and lacerated; under such circumstances I should say that it is love's labor lost. You have wasted time and energy and material and you can generally rest assured that the results will be nil. And you cannot say that you have not opened up new avenues of infection along the stitches. If the above be true of incomplete lacerations, how much more must it be true of complete lacerations of the perineum? Why would it not be better to wait until a proper interval shall have elapsed and then take the patient to some good hospital, and there, under rigid asepsis, have the laceration successfully repaired?

Many authorities do not favor immediate repair. Some advise waiting a week; others a month; some six months or a year. Amid proper hygienic surroundings I would advise immediate repair. If such conditions did not obtain, I would prefer the mediate or late repair. If in the city and I can have the patient removed to the hospital within a few hours or days after delivery, I like to operate at that time. After a week has elapsed I prefer the late operation, at a period six months or a year later. Referring to cases for late operation, I allow these to wait until cicatrization of the perineal and vaginal wounds has taken place.

I need not impress upon you that I am not in favor of practitioners treating these old lacerations and their complications and sequellæ in their offices. I cannot see how tampons, caustics and douches can aid in restoring torn muscles and fasciæ and replacing a prolapsed womb. And furthermore it is not honest.

In these late cases the operation should always be performed in a hospital, and always by a surgeon who has the skill requisite for such work. A bungling repair is worse than none at all as the patient is not relieved and a new mass of scar tissue is added.

There are innumerable methods for the repair of the perineum, but as there are so many good ones, and as each surgeon has his

own best methods, you will not be interested in a discussion of this phase of the subject at this time. Personally, I am in the habit of using a technic which embraces the good parts of the Emmett and Tait or flap-splitting operation. The method avails little if the operator be deficient in skill.

I am sure that the after-care of an operation for the repair of a lacerated perineum is equally as important as the operation itself. I have the nurse cleanse the stitches every three or four hours, or after urination and defecation, with an antiseptic solution. Vaginal discharge is not allowed to collect upon the stitches. The patient is kept upon her back at least fourteen days and is not allowed to arise for passage of urine or feces. The bowels are not opened for at least four or five days and when once opened they are kept in good condition. The body is carefully looked after lest bedsores appear. The stitches are removed at the end of two weeks but there is no harm done if they are left for a few days longer. Now, could this be done anywhere but in a hospital or luxurious home? Many practitioners have failed to secure the desired results because after performing a beautiful operation, they have failed to provide the proper postoperative care of the wound. It is for this reason that I have so frequently referred to the hospital technic. I do not wish to tell the practitioner that the surgeon in the city hospital is the only person capable of successfully carrying out the surgical treatment of lacerations of the female perineum, but I do feel that it is only in modern hospitals that the advantages obtain for the proper carrying out of these procedures.

In conclusion, I trust that I have achieved the purpose of this paper as stated in the introduction, namely, to bring out a few good points, the appreciation of which may save some perineums or make good those already injured.

I feel that the members of this society are in position to spread the gospel among the general profession and teach them not to handle these cases "negligently, unadvisedly, or selfishly."

References: Schauta; Wertheim; Bumm; Hirst; Williams; Kerr; Herman; Baldwin; Davis; etc.

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IDIOPATHIC PERITONITIS.

BY

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Miss S. M., twenty-eight or thirty years old. Father, mother and sister died of tuberculosis. Patient has never been very strong. On Monday, January 29, 1912, the patient had a sore throat that lasted for a few days, from which she recovered. Friday night, February 2, patient had some pain in the right iliac fossa, but slept all night. Saturday morning went to work. While at work, she was taken suddenly with a sharp pain in the abdomen without any localization. It extended diffusely all over the abdomen; she could hardly walk unless bending forward. Vomiting became extremely frequent from the start; she had diarrhea at the same time. No fever, no pain on pressure in the abdomen, which was absolutely soft everywhere. Sunday and Monday patient continued to vomit and have diarrhea. She still complained of diffuse pain in the abdomen. Her general condition grew rapidly worse. Monday, for the first time, her temperature reached 102° F. Abdomen distended, but no localization of tenderness; menstrual period started the same day. Dr. Sellenings and Dr. Winders, called in consultation, declared the patient had a general peritonitis. Her general condition grew rapidly worse. Wednesday, February 7, at 8 o'clock, I was called in to see the patient by Dr. Sellenings.

Physical Examination.—A glance reveals the fact that patient is very sick. The face is pale, eyes sunken with a black circle under them. Nose is pinched and cold. Tongue is still moist. The hands and feet are cold and blue. The pulse is running about 125, is thready and hardly noticeable. Patient has been vomiting during the night and morning. Diarrheal stools very frequent.

Examination of the abdomen shows a general tympanitis, with its maximum over the mesogastric region. Percussion shows a tympanitic sound over the whole abdomen, though slightly diminished in the pelvic region. The abdomen is not

sensitive to superficial pressure, but deep pressure, suddenly released, illicits pain. A careful palpation does not give any indication of resistance. No abscess formation as far as the palpation is concerned. The tympanitis is quite marked. Vaginal and rectal examination negative—no tumor, no abscess, no inflammation whatsoever. The uterus is of normal size; the ovaries and tubes cannot be detected, owing to the tympanitic condition of the abdomen.

Diagnosis.—General diffuse peritonitis, probably due to a perforation of an appendix or possibly of a duodenal or gastric ulcer, although there was no history of digestive trouble before this acute trouble.

Treatment Advised.—Owing to extreme condition of the patient, the hands and feet being cold, pulse thready, the tympanitis so marked, an operation which I considered first as feasible, was soon discarded, because I could see that the patient was losing ground steadily. She died at 11 o'clock, three hours after my consultation.

Autopsy.—Upon opening the peritoneum, a great quantity of purulent fluid escapes, sanious, yellow-greenish, odorless. The intestines are distended, especially the jejunum, duodenum and stomach. There are in places thin, fibrinous deposits. The peritonitis is diffuse, general; no tendency to encapsulation. A careful examination of the appendix shows that this organ is normal. The uterus, ovaries, and tubes are normal. The jejunum, the ileum, the cecum, the ascending and transverse colon show no trace of inflammation. In no place is there any trace of ulceration. The duodenum, ascending, descending and transverse, although quite distended, shows no trace of ulceration whatsoever. Stomach and pylorus absolutely normal. No glands in the mesentery, except a very small one of the size of a pea which shows nothing abnormal. Kidneys normal in size and appearance, capsule absolutely normal, detached without breaking away small portions of the parenchyma. On cut surface, the kidney shows a cloudy swelling, likewise the liver and the spleen. The liver is quite enlarged, the enlargement affecting mostly the left lobe. The spleen is firm, shows no trace of softness; pancreas absolutely normal. The small cavity of the peritoneum is normal and the foramen of Winslow is normal. Bladder absolutely normal.

In the pleural cavity, the left lung shows a fibrinous deposit the size of a dollar, but no trace of pneumonia or of bronchitis

is found. In the right lung, there is an infarct the size of a fifty-cent piece, the lung is very adherent and reduced in size, and shows a small old tuberculous focus in the apex. Otherwise, no trace of bronchitis or pneumonia. Heart very small, shows an enlarged ventricle with a very thin musculature. The left ventricle is small with diminished musculature. The heart shows a brown atrophy. The valves are normal, no clot.

The autopsy does not reveal anything which would suggest the cause of this general peritonitis. The staining of the pus taken from the pleural cavity and from the peritoneum shows that we have to deal with a streptococcus. A swab of the throat also reveals the presence of a great quantity of streptococci. Culture shows in the

Swab of the throat .....streptococcus, predominating.
Pleural patch .....streptococcus, pure culture.
Peritonitis pus .....streptococcus, pure culture.

A few years ago I saw a very interesting case which I am going to report briefly.

A boy, six years old. Has always been in excellent health. While sleeping, he woke up suddenly with a sharp diffuse pain in the abdomen. The little boy had not eaten anything previously, out of the ordinary. Fever was quite high, ranging between 103° and 104° F. He vomited incessantly a greenish fluid. At the same time, bowels moved frequently. Patient remained in this condition with fever, vomiting and diarrhea for about four days, then the vomiting ceased, but the diarrhea and the temperature persisted for about five weeks. Patient lost flesh and became exceedingly emaciated. In the meantime, the abdomen distended gradually, the maximum of the distention being localized in the umbilical region. The umbilicus became unfolded and slightly red. A dullness and fluctuation was present in this area.

The diagnosis of tuberculous peritonitis was made and I was invited to witness the operation. As soon as the abdomen was opened, a yellowish, thick, odorless pus came out. This pus was encapsu ated, the walls of the cyst being formed by thick, heavy, fibrinous membrane. Culture of the pus gave a pure culture of pneumococci. The boy made an uneventful recovery. This was a typical case of a primary pneumococcic peritonitis.

Peritonitis has been for years a subject for study by the

internists and pathologists, and still the question arises whether there is such a condition as primary or idiopathic peritonitis.

By primary or idiopathic peritonitis we mean such cases of infection of the peritoneum in which the organism shows absolutely no anatomical changes, except those of the peritoneum, in which no other tissue, structure or organ is affected and in which the inflammatory irritant acts directly upon the peritoneum, without producing any decided alterations whatsoever in other organs in its path.

It is evident that the question is more properly to be solved by the pathologist, rather than the clinician, for the latter will often fail to observe changes intra vitam, which are later discovered by the former.

Secondary peritonitis, occurring in patients suffering from acute or chronic diseases of the abdominal cavity, is exceedingly frequent. This is an every-day experience for the surgeon, but primary and virulent infection of the peritoneum of a healthy individual is certainly very rare. In such cases, the source of infection cannot be determined at autopsy. Osler reports twelve such cases in 102 autopsies, and in 125 postmortem examinations made in the Montreal Hospital on patients who died from peritonitis; there were five in which the cause could not be definitely determined. The five autopsies above mentioned were all in females. In two of these, death was due to a widely generalized streptococcic peritonitis. In the third case, the infection was apparently due to pneumococci. In the two remaining cases, the bacteriological findings were not recorded.

It is interesting to know by what channels the excitant factor enters the system and affects the peritoneum. The infection in primary or idiopathic peritonitis may reach the peritoneum by four ways: *First*, by the blood stream. *Second*, by the lymphatic channels. *Third*, in women, through the genital apparatus. *Fourth*, bacteria pass directly through the intestinal wall without leaving any trace of their passage.

First, by the Blood Stream.—When peritonitis is the consequence of a septicemia or of an infection localized far from the peritoneum, as for instance erysipelas of the face, or tonsillitis. In such cases, peritoneal infection is regarded as a *hematogenous* infection. But how do such microbes reach the blood stream? If a cross-section of erysipelatous skin is examined under the microscope, the lymphatic channels will be seen gorged with streptococci; from this, it is readily understood how they will

reach the blood stream, but I have no explanation to make as to why such microbes localize in the peritoneum in preference to other organs.

Tiser, after recent experiments, concludes that bacteria circulating in the blood do not enter the serous membrane, so long as this is uninjured, but after the membrane becomes slightly irritated or inflamed, then circulating organisms very quickly gain a foothold. The result of the invasion depends on the individual resistance and the virulence of the organism. In fetal peritonitis, infection of the peritoneum takes place through the placenta and the fetal circulation. It has been demonstrated experimentally, that in rabbits the streptococcus may go through the placenta and reach the fetal circulation. This is especially possible when the placenta is not quite normal and when the uterus is affected with a certain degree of metritis.

Second, through the Lymphatic Channels.—This mode of invasion is especially common in infections localized in the vicinity of the peritoneal cavity, such as erysipelas of the abdominal wall, infection of the pleural cavity, etc. The peritoneum is spoken of as a large lymphatic sac, which has a wonderful capacity for rapid absorption. The lymphatic vessels are especially developed on the diaphragmatic part of the peritoneum, and the intimate lymphatic communications between the peritoneum and the pleural cavity are exceedingly numerous. Therefore it is not infrequent to find an infection of one cavity developed secondarily to the infection of the other.

Third, the Uterovaginal Infection.—Infection of the peritoneum may take place through the vagina and the uterus, without leaving any pathological signs in these organs. This mode of infection may be exceedingly rare, but there are a few cases in the literature which seem to be convincing.

Meunier reports the case of a young girl, sixteen years old, who had never been sick before. At the time of her menstruation, she used a napkin which was previously used on the face of a patient with erysipelas. Two days after, she was taken acutely ill and died three days after of an acute general peritonitis. Every abdominal organ was found normal at the autopsy. Bacteriological examination showed a pure culture of streptococcus. A postmortem disclosed that this young girl was a virgin and that the genital apparatus was normal.

Tarnier reports two cases of nurses taking care of puerperal infections while menstruating; they were both taken suddenly

ill and one died in a few days of a general acute peritonitis; the other recovered after a long illness. In the first case, no cause for general peritonitis was found and bacteriological examination showed a pure culture of streptococcus. The uterus and genital organs were absolutely normal,—the young girl was a virgin.

How does such infection reach the peritoneum? Is it through the lymphatics, or through the uterus and tubes? This problem is difficult to solve, but very likely, the infection takes place through the lymphatics, as in puerperal sepsis. Bumm has demonstrated in such cases the presence of streptococci in the lymphatic vessels, when none could be found in the uterus and tubes, so that it can be reasonably concluded, that during menstruation, the uterovaginal tract being more susceptible to infection than at any other time, virulent microorganisms may, in very rare cases, rapidly reach the peritoneum and cause an idiopathic peritonitis.

Fourth.—Some authors seem to think, that in certain cases of idiopathic peritonitis, the organism causing the peritonitis comes from the intestinal tract.

H. P. Hawkins (*St. Thomas' Hospital Reports*, 1892) has found microscopical abscesses in walls of appendices that appeared normal to the naked eye. He believes that the appendix is responsible for some cases of idiopathic peritonitis, and that the most plausible theory to explain idiopathic peritonitis is that the microorganisms pass through the intestinal wall without producing any observable lesions in the peritoneum.

Reymond (*Annales des Maladies des Organes Genitourinaires*, April, 1893) has shown that in dogs the urobacillus liquifaciens of Krogius is not only capable of penetrating the bladder wall, but can also pass through the intact peritoneum without producing any microscopical lesion.

Every case of idiopathic peritonitis found in the literature has been caused by the streptococcus or the pneumococcus. There is no case of primary peritonitis due to the colon bacilli.

Primary streptococcic peritonitis and primary pneumococcic peritonitis are found oftener in the female sex than in the male, but the streptococcic variety mostly affects adults, the pneumococcic mostly children, between three and twelve years of age. Girls are more subject to it than boys. The anatomopathological lesions are different in both varieties.

In pneumococcic peritonitis the pus has a great tendency to

become encapsulated, forming more or less numerous purulent loges. The adhesions are extremely thick and form pseudo-membranes. Peritonitis is very seldom general and diffuse. The pus is greenish, thick, homogeneous, laudable and odorless.

In streptococcic peritonitis, there is no such tendency to encapsulation. The peritonitis is from the start diffuse and general. There is very little or no formation of adhesions and fibrinous membranes. The pus, has a dirty and sanious aspect.

In both varieties of peritonitis, the beginning of the disease seems to be more or less the same. In perfect health, or seemingly so, patient is taken with an intense sharp pain in the abdomen, comparable to the pain in the side of pneumonia. This pain, as a rule, is not localized in a special part of the abdomen. In a few cases, however, such as mine, it has been localized in the right iliac fossa, and the mistake in the diagnosis is readily understood. That the patient is taken sick with acute appendicitis, is the first idea, which will come to the attending physician.

In both forms of peritonitis the onset is very sudden. The only difference between the two varieties is, that the pneumococcic peritonitis is fulminating from the beginning, and absolutely without any prodromal symptoms. It comes like a thunder bolt from a clear sky. In the streptococcic peritonitis, although the patient stricken is seemingly in good health, he has had tonsillitis or a furuncle a few days before, in the majority of cases at least. In both varieties, the vomiting and the diarrhea are among the first and most constant symptoms. Vomiting is incessant. Constipation is looked upon more or less as the rule in peritonitis. This is true, no doubt, in the great majority of cases of peritonitis secondary to appendicitis or perforation of an abdominal organ, but it is not true for streptococcic or pneumococcic, primary peritonitis. The diarrhea appears as one of the earliest symptoms and has never been missed in any of the reported cases. It was so marked in a few cases, that the diagnosis of intestinal tuberculosis or typhoid fever has been made.

Temperature in both varieties of peritonitis is very high from the beginning. My case is an exception to this rule. Both forms of primary peritonitis may be said to begin suddenly with an intense, diffuse pain in the abdomen, vomiting, diarrhea and high fever. When one finds this syndrom, as a beginning of an abdominal disease, the possibility of a primary general peritonitis should be very seriously considered. The diffuse pain in the abdomen and the diarrhea, with high fever and intense and

constant vomiting, are sufficient to differentiate this form of peritonitis from that due to appendicitis.

Prognosis in both varieties is altogether different. In primary pneumococcic peritonitis, the symptoms remain the same for a few days; the fever is high, vomiting and diarrhea are constant and pain remains localized in the abdomen; after four, five or six days of the disease, the abdomen becomes distended and, in a few cases, the course of the disease resembles that of typhoid fever; but the Widal test is negative. Eight or ten days after the beginning of the disease, the fever subsides, sometimes very abruptly, sometimes gradually. The abdomen still remains distended and a dullness, with evidence of fluid, is found in the iliac fossa, on one or both sides, and very frequently in the umbilical region. In some cases, this condition has been mistaken for a tuberculous peritonitis. In half of the reported cases of primary pneumococcic peritonitis, perforation has taken place spontaneously in the umbilicus, forming a real peritoneal vomica, which resembles in every respect the vomica found in empyema. The course of the disease is a long one, lasting for weeks, and recovery is extremely frequent.

In streptococcic peritonitis, the general symptoms are very much more marked. The patient is exceedingly prostrated from the start, the pulse is very much accelerated and of small volume. The patient soon becomes delirious and manifests a tendency to collapse. In two, three or four days, the patient is dead. Very rare are the cases of primary streptococcic peritonitis which have recovered spontaneously or by surgical treatment.

It appears therefore that the prognosis of streptococcic peirtonitis is very much more serious than pneumococcic peritonitsi. In the latter, the infection of the peritoneum may remain localized in this serous membrane for a long time before affecting the general condition of the patient. In streptococcic peritonitis, the poisoning of the organism is exceedingly rapid and intense and terminates in a few days in death. Correct diagnosis is possible in a great many instances by carefully giving each symptom its value.

In appendicitis, the abdominal pain is less diffuse and is very promptly localized in the right iliac fossa, in the region of McBurney's point. The peritonitis due to appendicitis is not so acute in its development as the streptococcic and the general symptoms, the delirium and the tendency to collapse are very

much less marked in appendicular than in the streptococcic variety.

As a rule, appendicitis is not accompanied by diarrhea, neither is perforation of a duodenal or gastric ulcer. The pain from perforating ulcers is exceedingly sharp, so sharp that the patient is on the verge of unconsciousness, and is referred to by the patient as a stabbing sensation in the upper part of the abdomen or in the epigastric region. In primary streptococcic, or pneumococcic peritonitis, the pain is diffused all over the abdomen, without a special point of localization. Treatment is, in every case, surgical and its success depends upon an early diagnosis.

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THE OPERATIVE TREATMENT OF PUERPERAL SEPTICEMIA.

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It is probable that puerperal infection has occurred as long as children have been born. While great advances have been made in our knowledge of it and its treatment, there are yet many problems which are not entirely settled and about which there is a difference of opinion among authorities of equal rank. The high mortality which attends its severe forms has induced many efforts to save life by operative measures. It is difficult to lay down positive rules for guidance and exceptionally good judgment and wide experience may be required to make the right decision. Problems are presented to the surgeon in the consideration of this condition which require that he must know when to withhold the knife as well as when to employ it for the relief of the patient.

There are some forms of infection in which it may be advisable to explore the uterus to ascertain its condition. If the abdominal examination has shown an organ with delayed involution and tenderness and if the lochia is beginning to be foul, this would suggest the retention of blood coagula or the products of conception. If an exploration is to be made it should be done early and only under the strictest antiseptic precautions. The vulva and the vaginal walls, as well as the hands, should be thoroughly disinfected. Anesthesia is usually necessary in order to make a thorough exploration of the uterus. The entire cavity of the uterus can thus be investigated by the finger which should be gloved. Under normal conditions the surface of the uterus should feel smooth except at the site of the attachment of the placenta. This can be identified as a roughened and irregular area projecting slightly above the surface. If there is placenta present it may be recognized as a mass projecting into the uterine cavity and may be separated by using the finger as a curet. After all loose fragments have been thus separated and removed

the surface of the uterus may be gently rubbed with cotton wool on an applicator or swabbed with tincture of iodine.

The curet should be reserved only for those cases in which the retained products cannot be effectually removed by the finger or douche. There is no doubt that it is sometimes useful in skilled hands in emptying the uterus, but its dangers are so great that in the hands of the average practitioner it should rarely, if at all, be used in the puerperal uterus. In spite of the repeated warnings of those most experienced in its use, who use it with fear and hesitation, every tyro is confident that he can employ it with boldness and skill and hesitates not "to rush in where angels fear to tread." It is a signficant fact that nearly all those very serious cases which come into the hospital in a critical condition, give a history of having been cureted one or more times by the attendant. The curet must in any puerperal case be used with the greatest skill and judgment. If the lochia is scanty or purulent and evidence of retained products is not present, then the operation is contraindicated. If the uterine cavity presents a smooth surface as it does in many cases of severe streptococcic infection, then a curetment is probably the very worst thing that can be done as far as the patient is concerned and it should be absolutely forbidden. It is in these cases that the most harm will be done by its use and the result may, and oftentimes does, prove fatal to the patient. It is not to be denied that in some cases where fever follows delivery there is a prompt subsidence of the symptoms following curetment, but these cases are most always cases of sapremia and would terminate favorably spontaneously, or under other treatment.

The time for action is on the first rise of temperature after delivery. A thorough examination externally and internally of the pelvic organs should be made. If it is determined that the uterus is not entirely emptied and all clots, decidua and débris cannot be removed by the finger, then a large broad curet such as that used by B. C. Hirst may be gently passed over the surface of the uterus with just enough force to dislodge scraps of retained products. Such a curet will remove the débris effectively without injuring the mucosa. The ordinary sharp Sims' curet should never be used under any circumstances in the purperal uterus.

Whatever manipulation is adopted should be done in the very beginning of the trouble. After infective organisms have penetrated the body of the uterus or have spread to the lymphatics, or if general infection has taken place then any local treatment

by cureting is as useless as trying to remove sand from the beach by sweeping it up and is often productive of the greatest harm to the patient.

An important distinction must be made, however, between infection occurring as a result of abortion in the early months of pregnancy and infection after labor at, or near full term. After abortion in the early months the results of curetment are almost invariably favorable if done at once, whereas after labor at or near the full term it becomes a very dangerous instrument. It is more injurious than useful, and instead of being used indiscriminately by everybody should be reserved as almost a last resort and used only after most mature deliberation.

Suppuration in the pelvis may be the result of inflammation of the pelvic cellular tissues after childbirth, or may arise from peritoneal infection either with or without the formation of pus in the appendages. The attempts which have been made to cut short the course of a pelvic cellulitis by early free incision and drainage have not given very satisfactory results. It must not be forgotten that in the absence of pus formation, large masses of exudate may be absorbed. It is therefore to my mind inadvisable to undertake any operative procedures unless there is definite evidence of the formation of pus. If there are the clinical symptoms of pus formation and the abscess forms in the upper part of the broad ligament an incision may be made in the abdominal wall parallel to Poupart's ligament. The abscess may in this way be evacuated without entering the peritoneal cavity. If the abscess, however, fills the most dependent part of the pelvic cavity, namely, the pouch of Douglass, then an incision through the posterier vaginal wall may be made and the pus readily evacuated.

The formation of pyosalpinx in the course of puerperal infection is rare. If it exists it is usually the result of a preexisting gonorrhea. An infected tube, however, may have existed before the pregnancy occurred. I have frequently observed a run of temperature, an elevated pulse, and other symptoms of puerperal infection, which were due to an old pus tube. The onset of labor in these cases has seemed to light up an old fire which had been smouldering in a chronic or subacute stage.

The extension of the infective process from a puerperal uterus usually follows the line of the lymphatics producing abscess in the ovary or the pelvic cellular tissue. The pus in cases occurring in this way after delivery is of a very virulent type and if peritonitis

of a diffuse kind takes place it is rapidly fatal. To attempt therefore to remove appendages thus infected through an abdominal incision is to invite grave risk of setting up a diffuse peritonitis. If the infection happens to be from the streptococcus the danger is particularly great. The wisest course therefore if the presence of pus in the pelvis is detected after childbirth is to perform a posterior colpotomy and drain the pus from below. In those subacute cases in which there is no immediate danger to life, experience has taught that the avoidance of all operative treatment is the best course to pursue, until the virulence of the pus is attenuated and the acute stage has passed off. Then treatment should be instituted by abdominal section if the appendages are infected, or by posterior colpotomy in the case of a pelvic abscess.

Puerperal peritonitis is a dangerous complication and the mortality has always been high. The adoption of surgical procedures in the last few years has been attended with quite a degree of success, but there is no question connected with childbirth which demands more careful judgment than the question of surgery in some forms of puerperal peritonitis. It is not probable that the results will ever be so favorable as those obtained from peritonitis due to some local lesion such as appendicitis, perforating ulcers of the stomach, intestine, gall-bladder, etc. This is true because it is rarely possible to completely remove the cause of the infection as is done in these cases.

The flat-bellied peritonitis due to a severe and virulent streptococcic infection in which there is no peritoneal reaction, is dreaded by every surgeon. There may be subnormal temperature, cold leaky skin, no pain, or very little and the coils of intestine are found to be united by a fibrinous or purulent lymph. Death always ensues in these cases which may last three or four days. They are quite beyond surgical or any other kind of treatment, and seem to be overwhelmed from the beginning with the toxemia.

If the peritoneal infection is limited to the pelvis then posterior vaginal section should be done promptly and thus check its spread. This is especially valuable in the early stage of lymphatic peritonitis spreading from the uterus and broad ligaments. It should never be done in the diffuse forms of peritonitis because it is entirely too inadequate to meet the grave conditions present.

Great difficulty may be presented in the early diagnosis of general puerperal peritonitis. If an operation is to be done at

all it should be done early if a favorable outcome is to be gained. If we wait until the disease has fully developed valuable time will be lost and the operation may be undertaken too late to save life. On the other hand we know that many cases which look very bad at first subside spontaneously and the symptoms clear up. It is manifestly unjustifiable therefore to open the abdomen of every patient on the first appearance of symptoms of peritonitis. Wide experience and good judgment are, therefore, the only rules for guidance under such circumstances.

Very frequently the symptoms of peritonitis develop gradually, and a variable amount of seropurulent fluid is poured out. These are usually the less virulent cases, and abdominal section followed by the Murphy drip and the Fowler position saves many lives. In some instances localized collections of pus occur, being especially liable to form around the appendages in the pouch of Douglass, or in the iliac fossa. The results obtained here by incision and drainage are good.

In diffuse peritonitis abdominal section is the operation of choice, for it has the advantage of permitting a complete exploration of the whole abdominal cavity. Sometimes unexpected conditions may be discovered as the cause of the infection which had hitherto escaped detection, such as ruptured appendix, tumor of the uterus, or diseases of the appendages. Drainage should preferably be through the vaginal vault, though in some cases it may be through the incision of a stab wound. The best results will be obtained by a simple irrigation with normal salt solution at a temperature of 100° F., avoiding as far as possible any handling or manipulation of the tissues, and not attempting to detach flakes of lymph as was formerly done, for these are a part of nature's own protective.

Thrombophlebitis.—The remarkable success obtained in the treatment of aural pyemia by ligature and excision of the jugular vein has stimulated attempts to carry out similar modes of treatment in pelvic thrombophlebitis. Trendelenburg, in 1902 removed septic thrombosed veins for the relief of puerperal infection. Successful operations of this kind have also been reported by Williams, Freund, Bumm, Vineberg, Seligman, Huggins, and Miller of New Orleans.

The diagnosis of thrombophlebitis is not attended with particular difficulty. Repeated rigors form a characteristic feature in almost all cases, though occasionally they may be absent. Trendelenburg, Bucura and others advise operation after the

third or fourth rigor. Lea thinks this a little early in view of the fact that about 40 per cent. of the cases get well spontaneously. The mortality is high. Forty cases including five of his own were analyzed by J. Whitridge Williams showing a mortality of 43.9 per cent. The best results have been obtained in the subacute or chronic cases operated upon four to six weeks after delivery. There is little doubt that a considerable number of such cases would get well without any operation. It is not possible up to the present time to formulate precise indications for the operation, and owing to its gravity it is not probable that it will be adopted by the profession generally.

Hirst says: "If abdominal section is done because thrombophlebitis is suspected, many an unnecessary operation will be done. I have rarely indeed seen a condition of the ovarian veins that called for their ligation or removal. Thrombophlebitis as the sole cause of an operation and as the only thing to be removed is not demonstrated yet to the majority of surgeons." Polak believes that thrombophlebitis is a conservative process on the part of nature to limit infection, and that any form of pelvic manipulation only tends to break down and separate these thrombi, extending the infection to the remote parts, thus jeopardizing the patient's life.

Hysterectomy.—The question of the removal of the uterus as a mode of treatment in certain cases of puerperal infection is one that is attended with some difficulty. If there have been extensive injuries to the uterus, such as a rupture or perforation, or if there is an infected tumor, such as myoma, or if an abscess of the uterine wall can be demonstrated, the operation is clearly indicated. If on the other hand the operation is performed simply in the hope that a fatal result from septicemia may be averted, it is very much open to question. It is difficult or impossible to recognize the moment when it can be said that the infection is confined to the uterus, and if it has gone farther than the uterus the operation cannot remove the infection. If the operation is delayed until the infection is established it may be too late and will only precipitate the fatal issue. If done early we subject the patient to the risks of a grave operation when in many cases she would have recovered spontaneously anyhow. There is the further danger of conveying infection to the peritoneal cavity, or of opening up fresh lymphatic spaces, and the fresh wound surfaces may readily become a source of renewed infection. The mortality where hysterectomy has been done in

puerperal cases has reached 70 per cent. This is considerably higher than the death rate from puerperal infection of severe types treated without operation.

Vaginal hysterectomy has been championed as being less liable to general infection and accompanied with less shock. This, however, has obvious disadvantages. The enlarged uterus is friable and more subject to lacerations. On account of the infiltration of the broad ligaments the danger from hemorrhage is greater and it is harder to make a thorough exploration of the pelvic and abdominal cavities. It may be of use sometimes in cases of septic abortions or the later stages of the puerperium, but the method on account of its difficulties and disadvantages has largely been given up.

REACTION IN THOSE OPERATED UPON FOR TUBERCULOUS CONDITIONS.

BY

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THIS paper is rather in the form of a preliminary study of the reaction of those operated upon for tuberculous lesions. For the sake of conciseness, and because already much has been written upon the dissemination of tubercle bacilli and the production of a miliary tuberculosis, this phase of the subject is omitted.

Many authors, among them Bruno Wahllander(1), Döderlein and Kronig(2), Zweifel(3), and A. Mayer(4), have written upon the subject of operation in tuberculous subjects and have spoken of the danger of an exacerbation and the production of general miliary processes. Such is especially to be feared where there is a second more or less active process in the body, and particularly in those running a temperature at the time of operation. F. Weil(5) reports a case of miliary tuberculosis complicating abortion. All of these have considered the subject from the standpoint of a dissemination of the tuberculous process, and have taken no notice of reactions which resemble in all particulars that which follows the injection of tuberculin in a tuberculous subject.

Some time ago I was struck by the decided temperature reaction in a patient operated upon for tuberculous salpingitis, in whom the wound healed by first intention and in whom there were no other untoward symptoms. Shortly after this a similar condition was observed in a patient from whom I removed a tuberculous kidney. After these experiences we began to expect such reactions in certain of our tuberculous patients, and have been able to predict them at the time of operation. The reactions referred to have been characterized by a rise of temperature of from two to four degrees after twelve hours, often followed by another rise in the next twenty-four hours; a rise in the pulse rate; general bodyache and a feeling of malaise; sometimes marked headache; often an exacerbation of other local tuberculous lesions, or of quiescent ones. These reactions are in all respects similar to those described by Sahli(6) in his latest book,

as due to an overdose of tuberculin. The length of time the temperature has lasted has depended greatly upon the severity of the reaction in other local lesions. In some of our cases it has been for only a day or two, but in others it has lasted longer.

After observing some of these cases it occurred to me that this condition was due to the liberation during operation of a certain amount of tuberculous material into the circulation, and that we were producing a severe tuberculin reaction. In the instance in which there is a concomitant pulmonary lesion it is impossible to say how much of the reaction is due to local disturbance by the anesthetic and how much to the tuberculous focus.

Naegli(7) and Burkhardt(8) in their study of a large amount of autopsy material came to the conclusion that nearly every adult showed some tuberculous lesion in the lungs, active or healed, clinically as well as anatomically. Many of these had failed during life to give any symptoms referable to the lungs. Hamburger(9) is of the opinion that many of the cases of pulmonary tuberculosis giving active symptoms are due to the exacerbation of a long-standing latent pulmonary process, which activation was produced by the lowering of the patient's resistance or by the augmentation of the tuberculous predisposition. Kaufman(10) states that one-third to one-half of all bodies coming to autopsy in Germany show tuberculous lesions. Paul Thiery(11) is of the opinion that tuberculous processes are seldom confined to one organ.

The high percentage of von Pirquet reactions speaks for the fact that most of us have at some time or other been infected with tuberculosis.

While tuberculous lesions may be manifest only in the peritoneum, Fallopian tubes, uterus, kidneys, etc., it is generally thought that these are secondary to lesions of the lungs or the bronchial lymph glands.

Many of these tuberculous lesions may be reactivated by a number of different conditions, *e.g.*, disturbance of a local focus by operation; overexercise, as is often seen by the rise of temperature in pulmonary conditions following too much physical effort. This is one of the reasons that patients, especially those running a temperature, are kept quiet. On the other hand, in afebrile subjects, Patterson has taken advantage of this and, by moderate graduated exercises, has made his patients produce sufficient reaction (and tuberculin) to treat themselves with selfmanufactured tuberculin. It is thought that the tempera-

ture at the menstrual period in those suffering from tuberculous conditions of the uterus and tubes is brought about by the increased congestion of the catamenial epoch. Again, local conditions are made more active by a lowering of the body resistance, as is often seen in old people with tumor cachexia and chronic diseases(12). In just what way pregnancy causes an exacerbation of tuberculous conditions is not known, but it is generally conceded to be distinctly harmful.

Zweifel(13), in speaking of the results of operations upon tuberculous tubes and for tuberculous peritonitis reports four fatalities in sixty cases. In one of these, operated upon for what was thought to be tuberculous peritonitis, no tuberculous process was found in the abdominal cavity, yet the patient died of an exacerbation of the lung condition. One died from tuberculous meningitis. While he does not speak of the reaction as one due to the liberation of toxins, or attempt to explain why these patients died, he warns against operations for tuberculous peritonitis if there are other discoverable tuberculous lesions in the body. This account is the nearest that I have found to the idea which prompted this study.

Döderlein and Kronig(2), treating the subject of tuberculous peritonitis, warn against operating such patients when there is an active tuberculous process elsewhere in the body, especially pulmonary lesions. They fear the production of miliary tuberculosis.

Kelly and Noble(14), in their treatment of the subject of tuberculous peritonitis, speak of the time the postoperative temperature took to return from the high point to normal in drained and undrained cases, but lay no emphasis on the fact that there was a postoperative temperature reaction, nor offer any suggestion as to the cause.

Wahllander(1), in his inaugural dissertation many years ago, treated the subject of the dissemination of tuberculosis by operation. He spoke of the relative immunity from such a spread in those operated upon for tuberculous glands of the neck, explaining this as due to the fact that the processes are, as a rule, rather inactive and completely walled off.

I am of the opinion that many of these cases reported are not an actual dissemination of tuberculous material with the production of miliary tuberculosis, but that the condition is due to the reactivation of other tuberculous processes by the tuberculin liberated in the disturbance of the operated lesion.

For the production of this reaction the disturbance of a more or less active focus, and the presence of another focus, seem necessary. Where there is a pulmonary lesion it is difficult to say just how much of the reaction is due to the effect of the anesthetic.

ILLUSTRATIVE CASES.

Tuberculous Peritonitis.—Of seventeen cases from the Babies' Wards of the Post-Graduate Hospital (Services of Dr. Samuel Lloyd and Dr. Theodore Dunham), six showed more or less temperature before operation and are therefore unsuitable as illustrating the point under consideration. Of these six, however, it may be mentioned that following operation five died and only one was improved. This is very much in accordance with the experience as detailed by most authors.

Of the eleven with no temperature before operation, eight showed a rise of temperature of from two and a half to five degrees after operation, this rise taking place after from twelve to eighteen hours, and lasting from twenty-four to seventy-two hours (in two the temperature lasted four and five days). Three had no reaction. Ten were improved or cured, and only one died.

No mention is made of pulmonary lesions in any of these cases.

The following cases, unless otherwise credited to, are from my own experience.

CASE I. *Tuberculous Salpingitis.*—M. A., æt. nineteen. Family history negative. Married five months, never pregnant. Menses at sixteen, every four weeks, associated with marked pain during flow. Rather profuse. The last period was June 1, three days and profuse (this history taken July 10, 1912). Since marriage has had constant pain in the left adnexal region, worse at the menstrual periods. General health fairly good, though patient appears frail. Dulness and harsh breathing, both apices. Transverse section. Left side, densely adherent tube, size of hen's egg, filled with caseous material, removed. On right, the tube was the size of lead pencil, more or less coiled up and adherent to the broad ligament and cornu of uterus. Removed. Temperature on day of admission was 99.6, just before operation, 97.8. Operation at 9 A. M. That night at 8, temperature was 100.6, the next morning at 8, 102.5, the night of the first day after operation, 104. Second day after operation, in the morning, 100.6, at 4 P. M., 105.6, at 8 P. M., 102. After

this there was a gradual fall to normal on the ninth day. The second day after operation there began cough that was troublesome for four days. Patient left the hospital on the fourteenth day in good condition, with a wound that had healed by primary union.

Remarks.—Rather sharp febrile reaction with exacerbation of pulmonary condition.

CASE II. *Tuberculous Right Kidney and Right Epididymis.*—From the service of Dr. John Pirelli. A. A., aged thirty-two. Italian, male. Lungs show dulness and harsh breathing both apices. Right kidney and right testicle removed, on account of tuberculosis, on the afternoon of July 11, 1912. The next day the temperature rose to 101, and on the second to 103.6. Gradual fall to 100.2 on July 22, when these notes were taken.

CASE III. *Tuberculous Kidney.*—Mrs. M. F. C., aged fifty-two. Operation March 3, 1909. This patient had had severe cystitis for two years. Tubercle bacilli were found in the urine. At the time she was seen she was very thin and emaciated; previously very robust. Urine containing pus and tubercle bacilli obtained from the right kidney. That from the left showed no pus; tubercle bacilli were found by guinea-pig inoculation. It was thought that this might be accidental. Bladder showed severe cystitis, most marked around right ureter. Right lumbar nephrectomy.

The temperature before operation ran from 98.4 to 100. In twenty-four hours after operation it rose to 101, and remained near this until March 9, when it assumed a septic type, 97.8 to 102–103. This continued to March 22, on which day, and on the 23rd and 24th, it remained normal. On the 25th it again assumed the septic type, 97 to 102, and remained so until the patient left the hospital. The wound healed by primary intention, but the cystitis became markedly aggravated. This did not improve after operation; in fact it became worse, and the patient died, one and a half years after operation, from suppression of urine. This was possibly due to the fact that the second kidney was involved at the time of operation, or became so subsequently from an extension from the bladder.

Remarks.—Here we have a reaction that is not quite so marked as some of the others, and an exacerbation of the cystitis.

CASE IV. *Tuberculous Kidney.*—Mrs. D., aged twenty-eight. Admitted to hospital (private service) on August 14, 1911. In 1908 this patient caught cold and then had an attack of fre-

quency of urination, with burning micturition. In the previous spring had had some dull pain in the region of the right kidney. Since then has had frequency of urination, and dull pain in right renal region. On three occasions the pain has been in the form of sharp attacks lasting a few hours. Cloudy urine noticed from the beginning of symptoms.

Cystoscopy shows normal-appearing bladder. Urine from the right kidney contains moderate amount of pus, and shows numerous tubercle bacilli. That from left clear, and no tubercle bacilli found.

Physical examination of the chest shows a few moist râles just below the angle of the left scapula; occasionally one on right side in similar position.

August 15, right nephrectomy. The tuberculous process was confined to the upper pole and pelvis of the kidney. Ureter only slightly thickened. The operation was at 9 A. M. and the temperature before operation was 98. At 2 A. M. the next day the temperature was 101.4, and at 4 P. M. had risen to 104.6. Headache and pain in the left side of the chest were marked. From August 17 to 22 temperature ran from 101 to 103, after which there was a gradual fall to 99.4 on September 19. The wound broke down, and the patient had a tuberculous fistula up to the time she went abroad one year after operation. The bladder irritability cleared up completely, and the urine showed nothing abnormal.

Remarks.—Here we had a sharp reaction, with an exacerbation of the pulmonary lesion.

CASE V. *Tuberculous Tubes.*—Mrs. A., aged twenty-three. July 5, 1911, operation. This patient had had two children. Menstruation was regular until shortly before she came under observation. She should have menstruated on February 26, but was delayed until March 3, when a nine days' flow started, moderate in amount. Did not menstruate again until June 4, when a slight flow started that persisted as such until July 1, since which time it has been profuse.

Operation for tuberculous tubes, which were of the size of the adult male first finger, and filled with caseous material. No tubercles seen on the peritoneum.

The temperature before operation ranged from 99 to 100.

Operation was at 9 A. M., and on the next day at eight in the morning the temperature was 104.6. There was a gradual fall to 100 on the ninth day. Headache first few days, and trouble-

some cough on the third and fourth, though nothing was found on physical examination of the chest before or after operation. Von Pirquet positive. Wound healed by primary intention; patient has been seen since operation and feels well.

Remarks.—Here we had a marked temperature reaction. The cough was in all probability due to the action of the tuberculous products thrown into the circulation on a pulmonary lesion that escaped notice.

CASE VI. *Tuberculous Kidney.*—Mrs. W. E. B., aged twenty-eight. Seen first in June, 1911. Eight years before caught cold and had a severe attack of cystitis that lasted two months, since which time there has been marked frequency of urination. In the fall of 1908 had brisk hematuria for two days, which was called vicarious menstruation. In the Fall of 1909 general health was poor and she had a break down; at this time pus, albumin, hyalin, and finely granular casts were found in the urine. Was then voiding every one to two hours. From January, 1910, to the spring of 1911, felt fairly well, but since then has been losing weight, and the frequency of urination has become more marked. In June, 1911, she was voiding every five minutes to one hour by day and getting up nights from five to twenty times. Tubercle bacilli in bladder urine.

Cystoscopy showed severe cystitis, most marked in the region of right ureter. Left ureter catheterized and urine free of pus and tubercle bacilli obtained. Right ureter could be felt as thickened cord through the vagina.

Slight cough for long time. Physical examination of chest negative. Normal temperature.

In June, 1911, right nephrectomy. All except a very small portion of the lower pole of the kidney destroyed by tuberculous process. The wound healed by primary union, though two months later a small sinus formed that persisted for six months.

Temperature before operation, which was 9 A. M., June 26, 98.6; June 26, midnight, 102.4; June 27, 4 P. M., 103.6; June 28, 4 P. M., 102.8; June 29, 4 P. M., 102.8; June 30, 4 P. M., 101.6, and from that time a gradual fall to 100 on July 4. During the reaction the headache was marked and the existing cystitis much aggravated.

Remarks.—The postoperative reaction is similar to what we would have expected after tuberculin; brisk temperature rise, with an aggravation of the tuberculous processes, in this case the cystitis.

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APPENDICITIS DURING PREGNANCY, WITH THE REPORT OF AN INTERESTING CASE.

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(With Four Illustrations.)

It is not the purpose of this paper to give an exhaustive review of the literature, which has come into existence in the last few years on the subject of appendicitis occurring during pregnancy.

Neither is it thought advisable to discuss the question after the style of a monograph or text-book article because much that would have to be said has already been printed and would therefore be tedious.

The object is merely to discuss some phases which have been brought up by the case which will be reported later and illustrated by the accompanying diagrams.

Since Munde's case (1894) there have been many instances recorded where the pregnant woman has developed appendicitis, been operated and recovered.

Bandler's table in the *Jour. A. M. A.*, Oct. 17, 1908, shows all the cases of perforative appendicitis reported up to that time and gives the period of uterogestation at which the attack developed, whether or not there had been previous attacks, whether operation was performed, the condition of the appendix and amount of peritonitis, whether abortion occurred and if so at what time in relation to operation, and also the infant and maternal mortality.

These cases numbered 103, while the total number of all varieties of appendicitis which were reported as complicating pregnancy, labor or the puerperium is 235, which seems to show a marked tendency to the perforative form among such women. However, it is probably true that this is not a sure index of the real condition on account of the ease with which mild attacks may be overlooked by both patient and physician. This is illustrated in my case with the exception that the pathology produced may not with propriety be termed *mild*, although clinically it certainly was mild, or at least was so considered by the patient because she did not go to bed or consult a physician.

Since Bandler's report in October, 1908, there have been quite a number of such cases reported, notably those in the article by Palmer Findley, in the AMER. JOUR. OBST., December, 1909, who cites seven instances with three deaths which arose in his practice within eighteen months.

Cooke (*N. Y. Med. Jour.*, May 1, 1909) says that appendicitis should be suspected in all cases of right-sided pain occurring during pregnancy.

It is fair to presume that all cases of appendicitis occurring during pregnancy have not been recognized and that many of those which have been recognized have not been reported and that therefore the condition is much more common than a review of the literature on the subject would lead one to suppose.

The etiology of the disease during pregnancy is the same as in the nonpregnant state. Pregnancy is not an etiological factor save in those who have had previous attacks.

The pathology is only changed by the presence of the enlarged uterus. After the disease has spent its force, however, and recovery ensues, there are some new questions which arise. In those cases accompanied by peritonitis, occurring in the latter half of uterogestation, the effect of labor on possible adhesions or abscess must be considered.

Kelly and Hurdon, (p. 730), quote Muret's case where in the fifth or sixth month of pregnancy a typical appendicitis developed but soon subsided with a disappearance of all symptoms. The pregnancy went on to term and a normal delivery followed, but two days later the patient died from perforative peritonitis. Autopsy showed that the contractions of the uterus had caused rupture of an abscess.

Through the courtesy of my colleague, Dr. H. A. Duemling, it was my privilege to see and assist in the operation for appendicitis upon a woman six months advanced in uterogestation. The appendix was gangrenous. It was removed and a large gauze drain inserted, which was withdrawn in due time and the woman recovered and went to term. The case occasioned much discussion between us as to the pathology present, the effect of labor on the adhesions and the proper treatment when contractions came on. It was certain that the adhesions were quite strong and therefore one of two things must happen. Either the uterus must pull itself loose or labor must be terminated by the forceps on account of the adhesions holding the fundus so high that the organ could not empty itself. In event the former proved true,

we were afraid of hemorrhage into the peritoneal cavity, and if the latter obtained, we were afraid of hemorrhage from the placental site, so we decided to open the abdomen upon the advent of labor and ligate the adhesions before cutting them. This we did, and while we found plenty of them present, they were not so numerous and formidable as we had anticipated. This led us to speculate upon the possibility of the uterus freeing itself and whether the hemorrhage would have been alarming in case it had done so. The wonderful resourcefulness of nature in removing peritoneal adhesions was here exemplified. While the abdomen was open the labor was terminated by Cesarean section. This patient has since been confined in the normal way.

There seems to be some difference of opinion about the ease with which a diagnosis may be made. Thus Bandler says, "the diagnosis is not as a rule difficult," while Cooke maintains that "the diagnosis is not easy." In those cases which I have seen in the early months of pregnancy the diagnosis offered no unusual difficulties. In the later months one is only confused by the changed relations. He must eliminate nephrolithiasis and pyelitis in the one as well as in the other. The location of the pain, tenderness and rigidity, seems higher and nearer the back when the uterus is large.

Aside from the change in the location of the point of greatest tenderness there is no variation in the symptoms of appendicitis produced by pregnancy. Abdominal pain, vomiting, fever, increased pulse rate, etc., together with the objective findings make up the usual picture.

There is general concurrence in the matter of treatment. All writers advise early operation in spite of pregnancy. Should labor supervene in the presence of an abscess, this should be evacuated before emptying the uterus to prevent disseminating the infection. In other cases the belly may be opened immediately upon the completion of labor, if this has been started by the appendicitis, as not infrequently happens. Many cases are operated, however, without interrupting the pregnancy.

The case which has called up these thoughts anew occurred in the person of Mrs. R., twenty-three years of age, a resident of Antwerp, O., and referred by Dr. G. M. Brattain. She is the mother of two children, one nearly three years of age and the other born October 20, 1911. Her first pregnancy was normal in every way. In fact, her whole history is negative. She denies ever having had any kind of abdominal or pelvic pain

whatever prior to the attack she suffered about the sixth month of her last pregnancy. This she did not consider important enough to consult a doctor about. The pain was rather severe for one day but did not confine her to bed. It was much better the second day and gradually left on the third. She had no further pain until contractions started. The labor was of short duration (two to three hours) and the placenta was expressed, considerable force being used. She did not lose a very unusual amount of blood. On the second day of her puerperium she had a rather severe chill followed by a high fever which continued

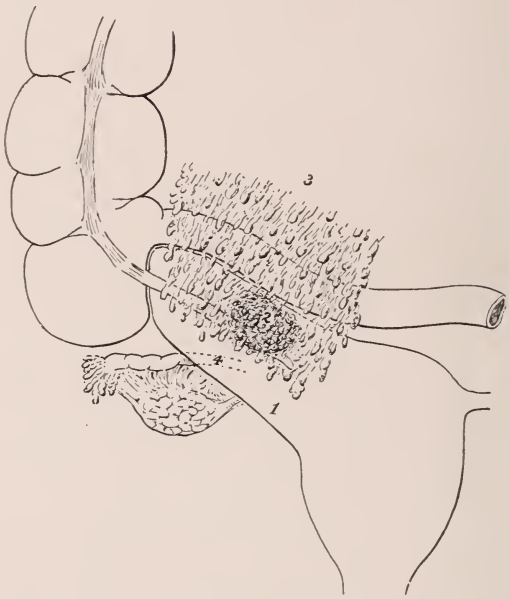

Fig. 1.—1. Uterine diverticulum. 2. Abscess. 3. Omentum. 4. Tube behind diverticulum.

for several days before subsiding. After this her progress was satisfactory. She got up on the tenth day and went about as usual until the 18th of November when she first consulted Dr. Brattain who discovered a mass in the right iliac fossa and sent her to her home and bed. In spite of his advice she called personally at his office the following day and he recommended operation. After considerable difficulty she was persuaded to accept his recommendation and came to the city where she walked into the hospital.

On opening the abdomen the condition shown in Fig. 1 pre-

sented. The omentum was firmly adherent over the mass and was finally ligated and divided when it was seen that the mass was made up of an enormous prolongation of the uterus on which was cemented the appendix, the ileum and cecum. The adhesions were the strongest I have ever met with. A large part of the dissection had to be made by the knife. While separating the small bowel from the uterus about 2 ounces of thick creamy pus escaped on the packing. It was very hard to identify structure and in separating the cecum from the uterine diverticu-

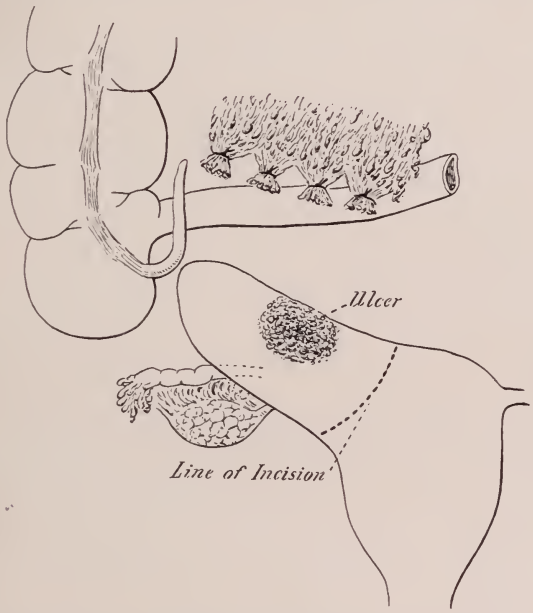

FIG. 2.—Omentum ligated; appendix turned back exposing ulcer. Dotted line indicates parts severed.

lum a rent was made in what was thought at first to be the ileum but subsequently proved to be the base of the appendix. When the appendix was amputated the amputation was made on the cecal side of the rent.

Upon removing the omentum, bowel and appendix from the diverticulum a large ragged ulcer was seen, as indicated in Fig. 2. The whole diverticulum was then removed by an eliptical incision and the incision closed leaving an appearance much as shown in Fig. 3.

In removing the diverticulum the right tube was severed from its uterine attachment and allowed to remain because it

had escaped involvement its position being behind and below the mass. A large gauze pack was introduced over the uterine incision and around the appendiceal stump.

Her convalescence was perfectly satisfactory. The pack was removed on the sixth day and replaced by a smaller one. She began nursing her baby on the second day and gradually took full charge of its feeding.

In discussing this case at our staff meeting objection was made to the statement that the date when the appendix became

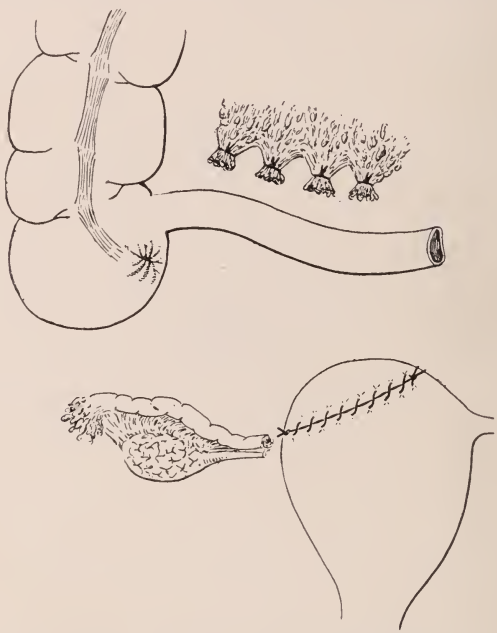

Fig. 3.—Diagram of end operation.

adherent to the uterus must have coincided with her attack of pain the latter part of July, a time when she was about six months pregnant, because at this time the appendix is supposed to occupy a position so far behind the uterus as to preclude the possibility of its being found on its anterior surface. It was held that there must have been a prior attack before the pregnancy occurred and that the appendix occupied the pelvis which is possible from its length. But we have nothing in the history to bear this out. Repeated questioning fails to elicit any attack previous to the one mentioned and my own opinion is that the adhesion took place at the time she had her abdominal pain.

Anatomically I do not think it is impossible for a long appendix on a rather mobile cecum to get into the position illustrated in Fig. 4.

One of the most remarkable incidents about this case is the fortunate outcome following the employment of Credé's method of placental expulsion. I can only account for the failure to rupture the abscess at this time by the character of the adhesions, which, as I have said before, were the most intimate and strongest I have ever met with in this location.

By the same token we should have had an alarming postpartum hemorrhage because of the inability of the uterus to properly contract. This, however, must be dependent in large measure on the placental site. If the placenta occupied the other side of the

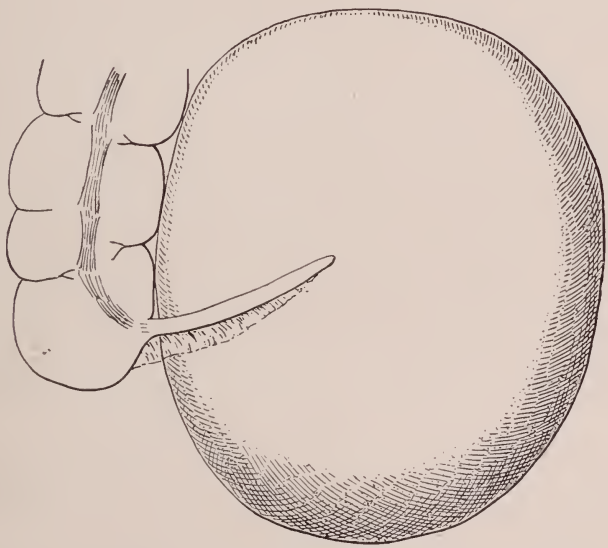

Fig. 4.—Probable position of appendix when adhesion occurred.

uterus, contractions following birth would produce the usual hemostasis, or nearly so, and as near as she can remember, the loss of blood, while much greater than that which attended her first labor, was not alarming.

Heaton's contention (*Brit. Med. Jour.*, 1905, i, 463) that abortion *must* occur in all cases where the uterus forms a part of the abscess wall, is disproved by this case.

Since the foregoing was written another case of appendicitis occurring during pregnancy presented itself.

The patient, Mrs. C., twenty years of age, was in her third month of uterogestation when she was taken with pain in the right side followed by vomiting. Her pulse increased in frequency and she developed some fever. She became tender on pressure immediately to the right of the umbilicus and there was some rigidity of the muscles at that point.

On opening the abdomen a distended appendix appeared free from adhesions. After removal the mucous membrane showed areas of petechial hemorrhage extending to the peritoneal coat, and there were several small concretions present.

Her convalescence was perfectly normal, the temperature falling to normal in a few hours and no signs of miscarriage appearing, she was discharged from the hospital at the end of two weeks.

THE AMMONIA COEFFICIENT IN PREGNANCY WITH A REPORT OF SIXTY CASES.

BY

A. S. HOTALING, M. D.,

UNTIL pathology reveals to us the true cause or causes of the toxemias of pregnancy, we must rely on our clinical findings for scientific treatment. While caution should be observed in basing clinical procedures on the uncertainties surrounding the interpretation of urinary analysis, nevertheless, the laboratory has shown us the importance of nitrogen and its partition, and to Williams belongs the credit of its clinical application.

The fact that the ammonia nitrogen is decidedly increased in toxic vomiting and acute yellow atrophy is well established, its behavior in preeclampsia and eclampsia is not so striking.

We shall make no attempt to speculate on the pathogenesis of the toxemias, but beyond the realm of speculation is the fact, that clinically as a rule, from altered metabolism, the urine presents certain well-marked changes, the recognition of which greatly aids us in diagnosis, prognosis, and treatment. Briefly, these changes in general, consist in an increase in the ammonia nitrogen and amido acids, and a decrease in the total quantity of urine and urea nitrogen.

The practical application of the above has one serious disadvantage, the need of a skilled chemist for analysis, and the length of time consumed. The estimation of the total nitrogen by Kjeldahl's, and the urea and ammonia nitrogen by Folin's method, require the best part of twenty-four hours.

At the Hazard Laboratory, Syracuse Hospital for Women and Children, Dr. Groat, the physician in charge, has worked in collaboration with me in the analysis of urine in the toxemias of pregnancy in a series of cases. Preliminary reports of our results were published in the AMER. JOUR. OBST., vol. lxiv, No. 6, 1911.

In his article Dr. Groat called attention to a method which he had originated for the determination of total nitrogen and ammonia nitrogen, which did not require special knowledge or

equipment, except, such as would be used in the ordinary analysis of urine and gastric contents. The length of time consumed is about one hour. Repeated trials by this method, controlling the test by the more elaborate processes, have not varied more than 1 per cent., a negligible quantity.

The analysis of urine in the toxic cases occurring in our service at the Hospital was so convincing, and corresponded so well with the published findings of Williams, that our curiosity was aroused as to the metabolism in normal cases, that is, cases with absence of toxic symptoms.

We are aware that even in the so-called normal pregnancies there is an alteration in metabolism in the majority of cases. In the latter weeks of pregnancy there is a decided tendency to the retention of nitrogen, a lowering in the percentage of urea nitrogen, and an increase in the ammonia nitrogen and amido acids, so that in the interpretation of analysis these factors must be taken into consideration, as well as the diet, exercise, and habits of the patient.

The value of this report is increased somewhat, we believe, by the fact that the cases were under personal observation in the Maternity Department of the hospital, and on practically the same amount of food and exercise.

In the sixty cases recorded in the series now under observation, fifty presented no toxic symptoms, and the amount of ammonia nitrogen was not in excess of normal. (Two cases in the series reached 11 per cent. and 11.3 per cent. respectively.) The average amount of ammonia nitrogen was 7.38 per cent.

We have not attempted to give in detail the urinary findings in these cases, reporting only those relative to the nitrogen content, in an effort to illustrate the dependence to be placed upon the ammonia percentage, which is normally about 5 per cent. It should be borne in mind that where the ammonia nitrogen continues above 10 per cent. we are probably dealing with a true toxemia.

The possible exception to this is a starvation acidosis, a condition not infrequently met with in the vomiting of pregnancy.

We believe that the acidosis can be differentiated from true toxic vomiting by the administration of bicarbonate of soda, preferable intravenously. A decided lowering of the ammonia percentage promptly follows as a rule in acidosis.

No.	Total Quantity.	Total N. Grm. p. m.	Ammonia N. Grm. p. m.	Ammonia, per cent.	Complications.
1	1300 c.c.	5.154	.49	10	None.
2	1980 c.c.	15.94	.693	4.3	None.
3	940 c.c.	21.08	1.974	4.9	None.
4	1880 c.c.	6.974	.329	4.7	None.
5	635 c.c.	5.280	.3277	6.2	None.
6	765 c.c.	5.569	.4953	7.8	None.
7	3820 c.c.	11.5	.6016	5.2	None.
8	1410 c.c.	10.46	1.085	10.3	None.
9	2400 c.c.	8.40	.462	5.5	None.
10	555 c.c.	3.418	.2331	6.8	None.
11	630 c.c.	4.077	.2886	7.8	Premature separation of the Placenta
12	600 c.c.	5.46	.4725	8.6	None.
13	3450 c.c.	19.07	.8452	4.4	None.
14	1660 c.c.	5.345	.581	10.8	None.
15	550 c.c.	1.347	.0841	3.5	None.
16	530 c.c.	9.60	.9275	10.4	None.
17	1030 c.c.	5.047	.3956	7.85	None.
18	1280 c.c.	5.734	.3814	6.6	None.
19	830 c.c.	7.727	.8134	10.6	None.
20	2010 c.c.	6.05	.4221	7	Placenta previa. centralis.
21	1280 c.c.	5.60	.56	10	None.
22	360 c.c.	2.620	.1901	6.49	None.
23	500 c.c.	5.055	.3480	6.8	None.
24	1600 c.c.	5.236	.571	10	None.
25	905 c.c.	6.088	.4434	7.3	None.
26	1300 c.c.	4.095	.4095	10	None.
27	1740 c.c.	12.18	.5481	4	None.

No.	Total Quantity.	Total N. Grm. p. m.	Ammonia N. Grm. p. m	Ammonia, per cent.	Complications.
28	560 c.c.	5.488	.49	8.9	None.
29	1800 c.c.	10.08	.5985	6	None.
30	1200 c.c.	10.85	.665	6.1	None.
31	670 c.c.	2.345	.1407	6	None.
32	1100 c c.	9.24	.8855	9.6	Pernicious anemia.
33	880 c.c.	8.40	.616	7.3	None.
34	1600 c.c.	16.8	1.176	7	None.
35	1000 c.c.	7	.7	10	None.
36	1500 c.c.	8.925	.7875	8.7	None.
37	1500 c.c.	8.4	.525	6.2	None.
38	950 c.c.	5.985	.2826	4.7	None.
39	1680 c.c.	8.232	.9114	11	None.
40	960 c'c.	11.08	.839	7.5	Justo-minor pelvis.
41	2370 c.c.	19.07	1.659	8.7	None.
42	1400 c.c.	6.3	.49	7.9	None.
43	800 c.c.	7	.56	8	None.
44	860 c.c.	10.23	.602	5.8	None.
45	1100 c.c.	3.85	.4375	11.3	None.
46	1200 c.c.	13.02	.651	5	None.
47	1800 c.c.	11.34	.5355	4.7	None.
48	1100 c.c.	10.39	.7231	6.9	None.
49	1300 c.c.	19.01	.8351	4.3	None.
50	980 c.c.	12	.5480	4.5	None.
51	650 c.c.	3.412	.6142	18	Para-i, 8 mo. Patient advised by friends to abstain from food as much as possible. Practically on starvation diet. After a few days of proper diet, ammonia dropped to normal. Diagnosed starvation acidosis. Labor normal at term.

No.	Total Quantity.	Total N. Grm. P. M.	Ammonia N. Grm. P. M.	Ammonia, per cent.	Complications.
52	750 c.c.	11.28	.6562	5.8	Para-iii, 7 mo. Headache, visual disturbances, edema, albumin 30 per cent. by bulk, casts. History of previous renal trouble. Absolute rest in bed and milk diet prescribed. Symptoms increased. Premature labor induced. Diagnosed nephritic toxemia. Recovery.
53	600 c.c.	6.51	.525	8.06	Para-ii, 7 mo. History of headache, edema, visual disturbances, and albumin for several weeks. Saw case in consultation after second convulsion. Casts, albumin 40 per cent. by bulk. Cervix rigid and undilated. Abdominal Cesarean after fourth convulsion. Diagnosed nephritic toxemia. Recovery.
54	.....	.....	.....	28	Para-ii, 3 mo. History of puerperal insanity with previous pregnancy. Patient vomits constantly, headache severe. Therapeutic abortion. Vomiting ceased immediately. Diagnosed toxic vomiting. Recovery.
55	365 c.c.	4.394	.8303	18.8	Para-i, 7 mo. Patient very emaciated. Vomits almost constantly. Rectal feeding and eliminative treatment without result. Premature labor induced. Vomiting ceased. Diagnosed toxic vomiting. Recovery uneventful.
56	800 c.c.	4.592	.854	18.6	Para-i, 2 mo. Nausea and vomiting constant since conception. Abortion advised and refused. Ammonia increased to 32 per cent. Patient gradually failed and jaundice developed. Toxic meningitis and acute yellow atrophy probable cause of death. Autopsy refused.
57	1620 c.c.	10.206	.7089	6.7	Para-ii, 7 mo. About forty-eight hours previous to convulsion, urine was as above. History of previous renal trouble. Saw case in consultation after second convulsion. Obtained 1 ounce urine by catheter. Albumin 30 per cent. by bulk and casts. Cervix rigid and undilated. Abdominal Cesarean. Convulsions ceased, but complete suppression of followed. Death twelve hours later. Diagnosed nephritic toxemia.
58	850 c.c.	5.32	.84	15.6	Para-i, 8 mo. Patient admitted to hospital after fourth convulsion. Albumin 8 per cent. by bulk, no casts. Cervix rigid and undilated. Abdominal Cesarean. Diagnosed eclampsia. Recovery.

No.	Total Quantity.	Total N. Grm. P. M.	Ammonia N. Grm. P. M.	Ammonia, per cent.	Complications.
59	790 c.c.	4.27	.945	22.8	Para-i, 8 mo. Patient admitted to hospital after sixth convulsion. Albumin 1 per cent. by bulk, no casts. Cervix obliterated. Internal podalic version. Diagnosed eclampsia. Recovery.
60	770 c.c.	3.15	.4984	15.5	Para-i, 4 mo. Vomiting, headache, and mental depression. Patient in a more or less semi-toxic condition until the fourth month, when the ammonia dropped to normal, and the case went to normal labor at full term. Only by careful diet and elimination, could the ammonia be kept below 10 per cent.

SUMMARY.

In cases under constant observation, with same amount of diet and exercise, and with absence of toxic symptoms, the ammonia percentage remained normal.

An analysis of the cases indicate, that in a great majority the metabolism is decidedly disturbed, with nitrogen retention.

The small number of apparently normal cases that approximately approached normal standards.

Impossible to always determine the clinical condition of the patient from analysis of the nitrogen alone, but a low ammonia percentage is of diagnostic and prognostic import.

A characteristic increase in the ammonia nitrogen in cases with toxic symptoms.

We believe it indicates the gravity of the toxemia, and that it determines the safest treatment.

It may indicate the presence of a grave toxemia, when clinical symptoms are absent.

Of great value in distinguishing between nephritic toxemia, preeclampsia, and eclampsia.

It should, however, not be relied upon exclusively. All physical signs and symptoms must be taken into consideration, in arriving at a diagnosis.

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801 EAST GENESEE STREET.

METHODS OF DIAGNOSIS IN LESIONS OF THE UPPER URINARY TRACT.

BY
G. VAN AMBER BROWN, M. D.,
Detroit, Mich.

In lesions of the kidney or ureter the first symptoms that attract the attention of the patient, causing him to seek the advice of a physician, are urinary disturbances and pain. The pain may be severe or mild, intermittent or constant. The onset may be sudden or gradual. If persistent and severe the pathology is usually one requiring surgical treatment. If due to calculus it is usually severe but intermittent. If due to malignancy it is more constant but not so severe. If the kidney is tubercular or abscessed there is little pain, but tenderness upon pressure. With a patient presenting any one of these groups of symptoms, the more refined methods of examination are not at first employed but what may be termed the grosser methods are usually selected.

Inspection.—The patient is placed on the back and in a light so cast that the lateral and abdominal walls are in a shadow. If suffering from an acute infection, as for example acute nephropyosis, a phenomenon corresponding to Lytton's sign is observed —the muscles on the normal side move with respiration while the diseased side remains immobile.

Palpation.—Spasm of certain muscles, however, is usually much more readily detected by palpation than by inspection; especially is this true in spasm of the lumbar muscles, which may include the abdominal muscles as well. When correlated with the patient's history, spasm of the quadratus lumborum is almost pathognomonic of surgical disease of the kidney.

Tenderness.—In subacute cases tenderness will be found to exist at the junction of the last two ribs with the outer margin of the erector spinæ. In acute cases the area of tenderness is broader. This tenderness is best elicited by deep pressure with the thumb tip.

Exercise.—Fixing the pelvis and having the patient bend the body forward and backward, also laterally, will in obscure cases enable one to localize the disease. A peculiar gait is acquired by

some patients in an attempt to relax the psoas muscle. Pain upon hyperextension of the thigh is based on the same principle. Walking increases pain in the presence of calculus in the kidney, while with stone in the ureter pain is unaffected.

Cutaneous Hyperalgesia.—Known as the kidney zone, is a triangular space, its base extending from the lower dorsal spinous process to the fifth lumbar spine with its rounded apex at the edge of the rectus muscle. Also we have what may be termed the ureteral zone, this being 2 or 3 inches in width, its upper margin corresponding with the lower pole of the kidney and extending from the vertebræ to the anterior axillary line, thence obliquely downward, terminating in the labia (scrotum and penis in male). In renal stone the zone can be demonstrated in nearly one-half the cases. In ureteral calculus the ureteral zone is present in about three-fourths of the cases. This zone is present in pyelitis, pyelonephritis and hydronephrosis. The more acute the affection, the more acute the hyperalgesia.

Reflex Pain.—The presence of stone at the pelvic brim frequently causes irritation of the iliac plexus, giving rise to referred pain in the knee and thigh.

Having studied the patient as regards the above phenomena, and since the keynote to success in the treatment of genito-urinary diseases depends upon methods that will obtain absolute accuracy in the diagnosis and exact location of the site of lesions in the tract, one should now resort to the more refined methods.

Laboratory Methods.—The urine contents are important, and should be carefully studied, the estimation of total solids being of much value. To be of true diagnostic value, a twenty-four, or perhaps a seventy-two hour specimen is collected. The general diagnosis of kidney lesion may readily be made by the occurrence of albumin, mucus, kidney casts, kidney epithelium, pus, blood, bacteria, crystals, and also portions of tumor. The total renal function may now be further estimated. This may be accomplished by one or more of the several functional tests. By segregation of the urine the individual kidney function is proven.

Functional Tests.—The presence of sugar after the injection of phloridzin shows the secreting capacity of the kidney. After the injection of 1/10 grain of phloridzin sugar, appears in the urine in from fifteen to thirty minutes. The healthy kidney secretes about 1 per cent. of sugar, the diseased less, depending on the extent of the disease.

Cryoscopy is troublesome and lends no more light than the estimate of urea.

With the electroconductivity of the urine I have had no experience, but believe it to be of no practical value.

Chromocystoscopy is useful if, for any reason, the ureter should not be catheterized, or if on account of a badly diseased bladder neither ureter can be located. By injecting 1 dram of a 4 per cent. solution of indigocarmin into the buttocks, the blue urine will flow into the bladder in five minutes in a good strong stream, reaching its height of color in thirty minutes. From the diseased kidney the colored urine appears later, does not reach the same intensity of color, and flows more sluggishly. The diagnostic point that can be gained by this very simple test is that, with strong probability, considering the rarity of horseshoe kidney, we are dealing with two functionating kidneys and the capacity of each may be estimated.

The phenolsulphonephthalein renal test [1] is the latest and probably the best functional test in use. It accurately demonstrates the functional abilities of the kidneys and may be used to differentiate the comparative activity of the two renal bodies when the excretions are separately collected. It is useful both to the surgeon, in preoperative examinations, and to the general diagnostician. It is remarkable in that 50 per cent. (approximately) of cases, 6 mg. hypodermic injection given into the lumbar muscles is eliminated in an hour, its elimination beginning in about five minutes. Three hundred cubic centimeters of water should be given the patient half an hour before injection, to insure free urinary secretion.

"Phenolsulponephthalein is better adapted for use as a functional test than any other drug previously employed for the same purpose on account of its early appearance in the urine and the rapidity and completeness of its elimination by the kidney and the reliance to be placed on its findings." "The method of quantitive estimation of the amount of drug excreted is simple and exceedingly accurate." "It is of immense value from a diagnostic and prognostic standpoint in nephritis, inasmuch as it reveals the degree of functional derangment in nephritis, whether of the acute or chronic variety." "In the cardiorenal cases so far studied the test has proved of value in determining to what degree renal insufficiency was responsible for the clinical picture presented." "The test has proved of value not only in diagnosing

[1] For the technic of this test see the *Arch. Ind. Med.*, Mar. 15, 1912, p. 284.

uremia from conditions simulating it, but has also successfully indicated that uremia was impending when no clinical evidence of its existence at the time was present." "The test has proved of great value in revealing the true renal condition in cases of urinary obstruction." "It is here of more value than the urinary output, total solids, urea, or total nitrogen, and enables the surgeon to select a time for operation when the kidneys are in their most favorable functional condition." "The improvement in the renal condition in cases of urinary obstruction following the institution of preliminary treatment is strikingly indicated by this test." "In unilateral and bilateral kidney diseases the absolute amount of work done by each kidney, as well as the relative proportion, can be determined when the urines are obtained separately."—Drs. L. G. Rowntree and J. T. Geraghty.

Instrumentative.—For the collection of urine the catheter need be inserted only 3 or 4 inches, distance to be measured by zebra catheter. If the catheter becomes clogged, the urinary flow may be established by injecting, through the catheter with a hypodermic syringe, a small amount of fluid.

If only one ureter can be catheterized, the urine should be collected from it, and examined for pus, blood, bacteria, etc.

Should tuberculosis be suspected, but the specific bacillus not demonstrated, a portion is collected in a sterile tube, centrifuged, and the sediment injected into the peritoneum of a guinea-pig, which, when tuberculosis is present, leads to the development of tubercular peritonitis. The most reliable of diagnostic tests are the animal inoculations. A pouting, markedly inflamed meatus, with cloudy urine from the affected side, when tuberculosis has been excluded, is evidence strongly pointing to stone in the ureter near the meatus. The stone may at times be seen protruding partially. The ureteral catheter encounters obstruction in about 75 per cent. of cases of ureteral stone. About two-thirds of these can be passed by the catheter. When the obstruction is passed there is a sudden flow of urine, the amount depending on the degree of dilation. The urine here collected and examined chemically and microscopically has its bearings, it being, in presence of stone, dark, smoky and reddish-yellow, containing pus and blood cells; while with obstruction in tuberculous ulcer, or which occurs in anatomic hydronephrosis, the urine above the obstruction is pale, though cloudy to a varying degree.

If, in passing, the catheter warps or does not go smoothly, it

may have become caught in a fold of mucous membrane, when it can be dislodged by injecting a little fluid (olive oil) through the catheter with a hypodermic syringe. After passing this point as in all cases where there is no actual obstruction, no sudden flow of urine is noticed. If stricture of the ureter is present there will be, after passing this point, a hugging of the catheter.

Introducing the styleted catheter, using a very pliable wire, ordinary fine fuse-wire, or better still, a catheter impregnated with collargol previously injected, and radiographs taken at various angles, is a great aid. Taken stereoscopically another dimension, that of depth, is gained, so that the distance from the ureteral catheter and the other shadow-casting substance can be quite accurately estimated and the course of the ureter shown. This enables one to exclude concretions in the appendix, phleboliths, calcified areas in the blood-vessels of adjacent tissues, tubercular deposits, scars, feces in the colon, pathologic changes in the uterus and adnexa, and also skin tumors, such as warts and nevi. It, too, may show calcified areas in the ureteral wall or a ureteral calculus that has ruptured through and become encysted into the surrounding structures.

With a marked dilatation of the ureter the catheter may meet with no obstruction since the stone may be playing up and down in the ureter, acting as a ball valve. Here the stone might show in the radiograph to be some distance from the catheter. It can be proved to be in the ureter by distending the ureter and pelvis with a collargol solution and radiographing. Before this procedure is carried out, there should be a previous radiograph showing the suspected shadow to be some distance from, but within a centimeter of, the styleted catheter shadow. In case of doubt as to the shadow from a small, flat, thin, soft stone, the injection of gas has been tried and is of much value, since it will show a dark area in contrast to the white area shown on the more dense deposit.

With the catheter in the kidney pelvis its capacity can be proved by the injection of fluid, and by distending the pelvis to its full capacity; pain of a certain clinical character can also be produced. In pyelitis urine may be collected and the specific germ demonstrated. Conditions in the kidney proper that are apt to confuse are single cortical stones, tuberculous lesions, gallstones and superficial bodies, all of which can be, by the cystoscopic data and the aid of the radiograph, pretty well diagnostically cleared up. In cases which are difficult to examine,

the diagnosis has to be worked up step by step. If we can only get urine from one kidney we should endeavor to do so.

Conclusion.—It has not been the intention in this paper to specifically describe the technic of different diagnostic methods; it has been the intention, however, to emphasize the importance of not relying wholly upon symptoms and the clinical appearance, but to use every means to accurately diagnose the existing conditions. True, we must always consider the general clinical picture, and also is it true, that one should, in the differential diagnosis, be familiar with the diagnosis of disease in the surrounding viscera. Yet the data derived from a careful urinalysis, the cystoscope and *x*-ray are necessary to an accurate diagnosis. It is for the frequent and systematic use of these valuable aids, which will bring us so many happy surprises, that I am making a plea. If I have succeeded in impressing upon some one the importance of carrying out in detail such an examination, the object of this paper is accomplished.

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IN MEMORIAM.

DR. EDWIN SAUNDERS RICKETTS.

BY

CHARLES L. BONIFIELD, M. D.

Dr. Edwin Saunders Ricketts was born at Procterville, Lawrence Co., Ohio, May 18, 1853. His father was Dr. Girard Robinson Ricketts, for many years a practitioner of medicine and an honor to his profession. His mother was Rachel McLaughlin Ricketts. His ancestry were French Huguenots. He graduated at Marshall College, Huntington, W. Va., in 1871 and received the degree of M. D. from Miami Medical College in Cincinnati in 1877.

He at once located in Portsmouth, Ohio, where he was soon engaged in active practice. He was one of the first practitioners in that locality to use chloroform in obstetrics. After ten years of creditable work as a general practitioner, the proper foundation for every specialist, he decided to limit his work to gynecology and abdominal surgery.

Lawson Tait was the star in the medical world at that time, toward which all eyes were turned, and Dr. Ricketts went to England to be his student. The impression on Dr. Ricketts by this great man was indelible, he showed it in his work and nothing gave him greater pleasure than to talk of Tait as a man and a surgeon, to those who had not seen him.

While abroad he visited Berlin, Paris, Rome, Florence and Naples. He saw work by Martin and Budat.

In 1888 he located in Cincinnati and began the practice of his specialty and it is to be said to his credit that neither in fair weather nor foul did he ever desert the flag under which he enlisted.

He was the first surgeon in Cincinnati to operate for gallstones. He was one of the first to operate for appendicitis. As an operator he was rapid and daring.

He was a great believer in medical societies and attended them faithfully, contributing his share of papers and discussions. He

was a member of the Cincinnati Academy of Medicine, Ohio State Medical Society, American Medical Association, a member and ex-president of the Cincinnati Obsetrical Society, an honorary member of the Virginia State Medical Society and of the Hempsted Academy. He was an ex-member of the British Medical Society and British Gynecological Society.

He joined the American Association of Obstetricians and Gynecologists, and was its President for one year, presiding in Washington. Though he was unable to attend the meetings of this Society for the last few years, he never lost interest in its doings. He never failed to call on the writer within a few days after his return from a meeting to learn all the news concerning it and was pleased to know he was still missed.

Dr. Ricketts was a loyal and fearless friend. He was generosity itself. His optimistic, cheerful and jovial disposition insured him always and everywhere a hearty welcome.

He died in Cincinnati, June 13, 1912, of cancer of the liver. The disease in this organ no doubt being secondary to that of the prostate. He was only confined to his bed for a few days prior to his death.

His remains were cremated June 15, and the ashes will be deposited beside the grave of his wife in the cemetery at Portsmouth, Ohio.

In his death this Association loses a warm friend. He had contributed his share to its past achievements and was proud of its present status and confident of its future.

"Peace to his ashes."

IN MEMORIAM.

WILLIAM JAMES ASDALE, M. D.,

BY

X. O. WERDER M. D.

(With Plate.)

Dr. William J. Asdale, of Pittsburgh, died May 19, 1912, after a protracted and painful illness at Patterson Heights, near Beaver Falls, a suburb of Pittsburgh, having spent the last three years of his life at this place. He had been a member of the American Association of Obstetricians and Gynecologists since the year 1890, and was therefore one of the oldest members of this Association. A very active Fellow in the earlier years of the Association, and a regular attendant upon its meetings, he had in more recent years rarely been seen at its annual gatherings, and few of the younger members had therefore an opportunity of knowing him personally. Up to his last illness he retained, however, an active interest in the affairs of the Association and its Fellows, and frequently commented upon the papers and discussions presented at the meetings, which he evidently had studied with much care, in the Journals and "Transactions."

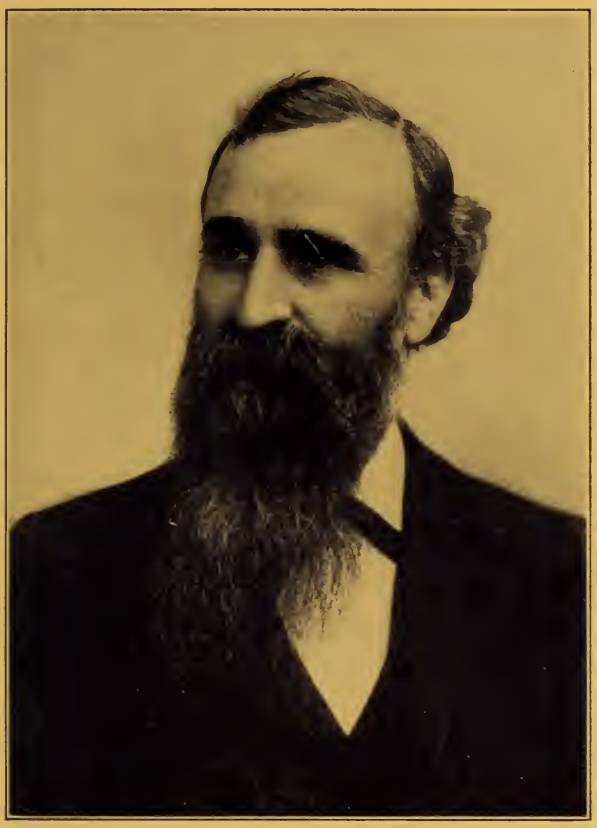
Dr. Asdale was a native of Pennsylvania, having been born at Clinton, Allegheny Co., August 25, 1842. After receiving a thorough classical education he entered the Rush Medical College in Chicago, from which he graduated in the year 1866.

He immediately began practising medicine in Pittsburgh with much success and soon became one of the pioneers in gynecology, having a wide reputation and with a large following. He served on the staff of the West Penn Hospital, and on the organization of the West Penn Medical College, he occupied the chair of diseases of women for a number of years. After his resignation many years ago, he retained his connection with the college in the capacity of Secretary of the Board of Trustees until three years ago, when the college became affiliated with the University of Pittsburgh, as its medical department. In his position as Secre-

tary of the Board of Trustees, he made himself almost indispensable to the medical school, devoting much of his time and a great deal of energy and enthusiasm to his duties, which required considerable executive ability and which were by no means light or free from care. Though always a busy man, he gave up some of his time to the public affairs of his home city, serving in the City Council and on the School Board.

Dr. Asdale was a man of strong personality, being very pronounced in his views, which at times were antagonistic to his best personal interests and were sometimes the means of alienating some of his professional colleagues. In spite of his peculiarities he was admired by those who knew him intimately for his many sterling qualities, his truly noble and Christian character and his fine professional and literary attainments. He was diffident and slow in forming friendships, but as a friend he was staunch and loyal, and always ready to give assistance and valuable advice.

Dr. Asdale was twice married. His second wife, who was Jessie B. Reeves, survives him. His only son is Dr. W. J. Asdale, practising in the State of Wyoming.



Dr. William J. Asdale.

IN MEMORIAM.

DR. ALEXANDER HUGH FERGUSON.

BY

CHANNING W. BARRETT, M. D.

THE twenty-fifth annual meeting of this distinguished Society is about to close.[1] Twenty-five years in the life of a society leaves it still young but in that time it has seen charter members and distinguished fellows leave these meetings and return no more.

When the Louisville meeting was being held one year ago, a distinguished fellow, the subject of this sketch, Dr. Alexander Hugh Ferguson, student, teacher, author, surgeon, inventor, leader of men, was meeting sickness for the last time. "He saved others, himself he could not save."

Limitations of time and capacity prevent a full consideration of the life and work of Dr. Ferguson. To name his official connection with the profession and his contributions to medical literature would occupy no small measure of space or time. If I could be permitted to point out from the life of this virile productive and broad-gauged man incidents which would stimulate us to greater efficiency or higher ideals or deeper sympathies, I would but repay the Society in a small measure for the honor conferred on this occasion.

If the members of this society were asked to name a preference as to ancestry other then their own, nine out of ten would choose Scotch. Dr. Ferguson very early in life showed acumen in the choice of ancestors; they were Scotch. Of this Dr. Ferguson was justly proud. A short time before his last sickness I had the pleasure of introducing him at a banquet at which time a cartoon of Dr. Ferguson as Scotchman in kilts and playing the bagpipe was shown. This cartoon he carried home to his folks with great pleasure and national pride. His parents were not only Scotch but they belonged to the progressive type of Scotch—they left Scotland and came to America. Here in Manila, Victoria Co., Ontario, Canada, young Alexander Hugh Ferguson was born in 1853, the seventh child of a

family which later numbered nine. If we may judge of times, conditions, Scotch Canadian thrift and the size of the family, we must conclude that young Ferguson while dreaming of the future was not a stranger to toil, struggle, hardship and rigid economy, things which make mightily for character. The pioneer spirit of the Fergusons' as later exhibited in Dr. Ferguson's surgical work is shown by their second transplantation to Manitoba when Winnipeg was hardly more than a village and trading post. We glean from reliable sources that as a boy and youth Alexander Ferguson was active, robust, athletic, but while not a bookworm was a close student, even going outside of the required school work to ground himself in the fundamentals of a scientific education. We find him a marked man for excellency of work as student and tutor in Manitoba College and leaving an impression upon the faculty as well as upon his opponents on the football field. Struggling toward a higher education, we find him teaching in interims of college work and many a frontier lad must have been awakened by an enthusiasm not possessed by the average teacher. In 1881 we find him graduating from the Medical College, Trinity University of Ontario, with high honors and receiving the degrees of M. D., M. B., C. M.

Buffalo has the honor of being his first location in practice, and while his success might have been less precipitate had he remained yet it would have been to add luster to the name of Ferguson and greater fame if possible to the surgery in western New York. But the spirit of the Canadian West with her growing opportunities and the love of an aged mother in lonely Manitoba were calling above the roar of Niagara and in 1882 he threw his energy, enthusiasm, ability and training into the upbuilding of medicine and surgery of the great Northwest. Here he at once showed himself a leader of men and an educator. Through his capacity for work, ability to make friends, and his rare good judgment his rise was rapid. The first year he was registrar of the College of Physicians and Surgeons of Manitoba, the second he was instrumental in founding the Manitoba Medical College in which he was Professor of Physiology and Histology from 1883 to 1886. From 1886 to 1894 he was Professor of Surgery in this institution and was prominent on the surgical staff of the foremost hospitals of Winnipeg. The esteem with which he was held by the medical profession is shown by the fact that he was elected first president of the Manitoba (Pioneer) Branch of the British Medical Society, 1892–1893.

The twelve years of Dr. Ferguson's life spent in Manitoba were active years, first of general practice and later of general surgery.

A close observer, an acute diagnostician and a bold executive and located in the metropolis of the Northwest he was consulted from far and near by those with obscure diseases. His location gave him opportunity and Dr. Ferguson was not one to remain indifferent.

Winnipeg was the supply station for the great Northwestern fur trade. From this point went forth the man and his dogs into the long intense and lonely northern winter. Out of this lonely life grew a comradeship between the man and his dogs. Back to civilization came the survivors of this rigid life bringing their furs for the market, their stories of hardship and their echinococcus infected livers for Dr. Ferguson's clinic. Out of this experience the young surgeon developed a diagnostic acumen that was well-nigh marvelous and through his published observations he attracted the attention of the medical world. In after years as these men came out of the North with advancing spring and found their "wizard" gone, they followed him on to Chicago and so he continued an experience in hydatids of the liver that far exceeded that of all other Chicago surgeons combined. One of these cases he demonstrated to me in our office a few weeks before his last sickness, clinching the diagnosis by the presence of a peculiar thrill upon succussion, which his unusual experience enabled him to detect.

Dr. Ferguson's short years in Winnipeg had brought him a vast experience, had elevated him to the head of the medical profession and stamped him as a public figure of the rapidly developing province. While yet a young man of forty, he had measured his strength against the Northwest and had won. His greater ambition longed for keener competition to demonstrate that he had not won because of isolation. He with many others responded to the "I will" spirit of Chicago of World's Fair time. None perhaps hearing the "call" left as much as he left in Manitoba. None coming had so little to regret as he. During the depressing times and keen competition following the Fair Dr. Ferguson steadily, we might say rapidly, made his way while others fell by the wayside.

During the latter years of Dr. Ferguson's stay in Canada he had found time to visit the clinics of America, Scotland, England and Continental Europe. He also took a course in the laboratory with Prof. Koch. Up to 1890 he had been working, observing, studying and experimenting; from that time until his death we find him a prolific writer and no one familiar with his work doubts that he had much to contribute. Scarcely a subject has interested the surgical world in the last twenty years but what an investigation would find Dr. Ferguson a pioneer thinker and worker. If the technic

was difficult or obscure Dr. Ferguson originated a method. If an instrument was lacking he invented one. Versatility, dexterity, boldness and unerring judgment characterized his surgical work. If we mention his work upon "Hyadtids of the Liver," "Inguinal Hernia," and "Cleft Palate" as of special importance, it is not to discredit his other work, for should these be overlooked his valuable contribution to the surgery of male and female genitalia, the kidney, gall-bladder, stomach, intestines, appendix, thyroid gland, etc., etc., would entitle him to a larger place in medical literature than is reserved for most men in his field. To mention the societies of which he was a member or fellow would be to quote names of most of the local, national and international societies devoted to the consideration of general surgical work. His membership also extends to local special surgical societies and to many medical, scientific and sociologic organizations outside of his special work. Many of these societies had been served by him as president.

Dr. Ferguson was a strong, rugged type not given to hypocrisy and detested it in others. He took no halfway ground. He went directly at the root of the matter. He was an ardent, enthusiastic, yet withal, kindly contender for what he deemed the truth, and no one taking issue with him need figure upon finding him perturbed or unprepared to defend his position. Strong, positive natures invite opposition and this Dr. Ferguson encountered but his open, honest, aggressiveness and defense commanded the respect of even his opponents. Much might be said of Dr. Ferguson's educational and professional work in Chicago but time forbids. He was elected to the chair of surgery in the Post-Graduate Medical School before locating here in 1894. In 1900 he was elected Professor of Clinical Surgery in the University of Illinois and began undergraduate teaching, in which as well as in his postgraduate work he was eminently popular, thorough and successful. When stricken down he had just completed a year of presidency of the Chicago Medical Society. A few years since his excellent work was brought to the attention of the King of Portugal and by him was Dr. Ferguson decorated "Commander of the Order of Christ." Up to a short time before his death one would have said that his hardy rugged constitution and his close knit powerful physique would carry him on to many years of usefulness. With the same judgment exercised that he exhibited in the care of others he should be with us to-day. We cannot but regret the untimely cutting off of this genial whole-souled, productive, brilliant fellow of our society.

Early in his professional career, in 1882, Dr. Ferguson was married to Miss Sarah Jane Thomas, daughter of Edward Thomas, Esquire, of Ontario, Canada. To this union were born two sons, Ivan H. and Alexander D., a physician, who with Mrs. Ferguson survive him and to whom he set an example of the useful life and left a noble inheritance.

IN MEMORIAM.

HENRY GIBBONS, Jr., M. D.,

BY

S. H. BUTEAU, M. D.

Dr. Henry Gibbons, Jr., a member of this Association for more than twenty years, died at his home in San Francisco, September 27, 1911, from a very rapidly advancing arteriosclerosis. He was active in the practice of his chosen profession and in lecturing until within a comparatively short time of his death, which occurred a few days after his seventy-second birthday.

He was of sterling old Quaker stock and was born in Wilmington, Delaware, September 24, 1840. He came freely into his chosen profession, for he was born and bred a physician. The influences of heredity and home environment are here beautifully illustrated by noting the professional calling of immediate members of this interesting family. The grandfather was a physician. Three of his eight sons were physicians, one of whom, Dr. Henry Gibbons, Jr., was the father of the subject of this Memorial. Dr. Henry Gibbons was the father of six children, but two of whom are sons and they, at the present time, are successful practitioners of medicine in San Francisco. In 1871 the Doctor married Miss Mary Conger Raymond, an accomplished and charming woman, who proved a devoted wife and mother. She died in 1899.

After receiving his academic education, Dr. Henry Gibbons, Jr., taught school for a few years and then began the study of his profession at the Medical College of the Pacific from which he was graduated in 1863 and at once became associated with Dr. E. S. Cooper. The practical work done under this eminent surgeon proved of value beyond measure to Dr. Henry Gibbons, Jr., later in the arduous duties of Acting Assistant Surgeon of the United States Army, which position he accepted in the

strenuous days of 1864. For two years he served his country in the field or at the Douglas Military Hospital, Washington, D. C.

Returning to San Francisco, Dr. Gibbons, Jr., became associated with his father in the practice of medicine and in the editorship of the *Pacific Medical Journal*.

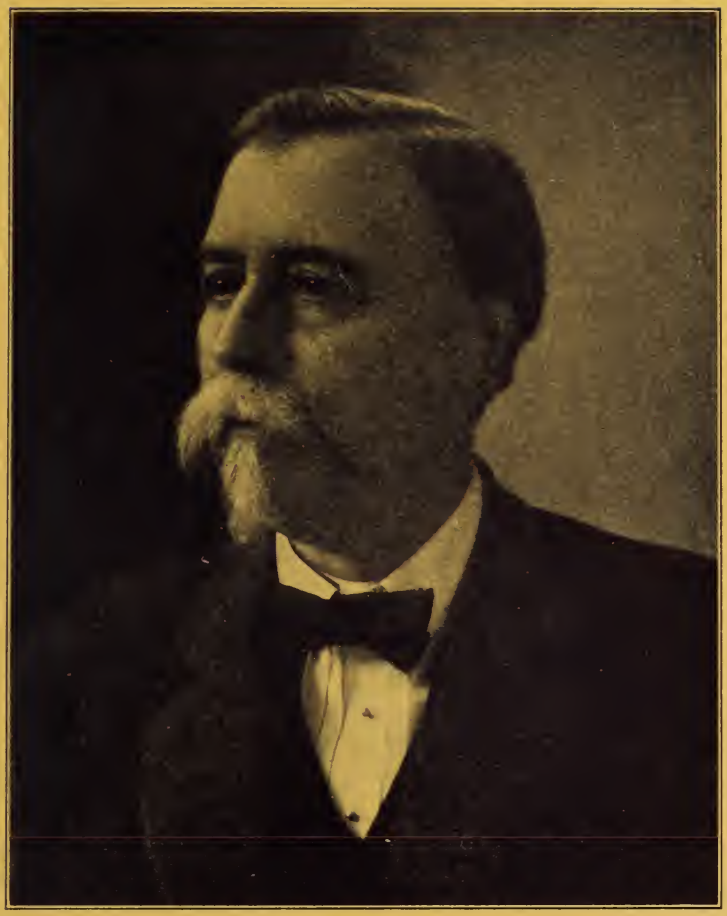
He received the honorary degree of Master of Arts from the University of the Pacific; was elected Dean of the Medical College of the Pacific and to the same position by its successor—Cooper Medical College. He was appointed Health Officer of San Francisco and later was made a member of its Board of Health, served as a member of the San Francisco Board of Education, was chosen Professor of Materia Medica and Therapeutics in Cooper Medical College, and later Professor of Diseases of Women and Children; was a member and president of various medical societies. Shortly before his death he was appointed Emeritus Professor of Gynecology and Obstetrics in Stanford University. These honors and responsibilities are witnesses that bear silent, but convincing testimony of the devotion of his life to professional, educational and civic uplift, and they come to him only who possesses the highest standard of qualifications.

I knew Dr. Henry Gibbons, Jr., well for more than twenty-three years. From the time I first met him, when I was matriculating as a student in the Cooper Medical College, I was impressed by his kindly nature. He was always unselfish, tolerant, sympathetic, trustful. He kept faith with himself, with men and with things through all the varied experiences of his life. With him to live seemed a special privilege. His college work and large practice undoubtedly made him the busiest physician in all the West for many years and yet he was never too busy to carry the burdens of discouraged students and young doctors, until, by the example of his own strong personality and conduct, he inspired them with the energy of cheerfulness and determination by which they could carry their own borders. We might all envy him his host of warm friends and yet I am sure he never tried to make a friend, he tried only to do friendly acts.

He lived in an age when science told us great truths and formulated many of nature's laws, and it was the inspiration of his life not only to apply these in his practice, but to help spread them and make them of universal knowledge. And thus we see him devoting himself at an early age to the publication of medical journals and to the teaching of medical students.

Dr. Gibbons, Jr., grew to manhood in the State of California

at an early period of its history, when the great mass of its people were moved by the single ambition to quickly amass a fortune, but the humanitarian soul of Dr. Gibbons could not be influenced by such sordid environment. He expended his energy in the development of high, unselfish ideals, but he was no dreamer; he taught them by example as well as by precept. Full was his life, rich in experiences of unselfish devotion to his chosen profession and to the duties of citizenship. His was the rounding out and the development of all his human possibilities through work, and struggle, and trial.



Dr. Henry Gibbons, Jr.

IN MEMORIAM

MANNING SIMONS, M. D.,

1846–1910.

BY

CHARLES M. REES, M. D.,

Dr. Manning Simons was born in Charleston, S. C., May 6, 1846. His father, General James Simons was a well-known lawyer of that city and his mother, Sarah Lowndes Wragg, was of the Wraggs who had so large a share in the building up Charleston.

Dr. Simons' preliminary education was received in the schools of his home city, and at the time of the Civil War he, being too young to enter the army, was sent to the Charleston College. As soon as he was of sufficient age, however, he left college and entered the Confederate service, serving as the courier on General Hardee's staff. This was in 1863 while in the junior class. On his return after peace wos declared, like many others, he felt he could devote no further time to collegiate study but must set about his life's work, and started in his study of medicine at the Medical College of the State of South Carolina. Not until 1908 was he awarded the Baccelaureate degree by the College of Charleston which at the same time awarded him also the title of Doctor of Laws in recognition of his great attainments. In 1868, he attained his degree in medicine and settled in his old home to practise.

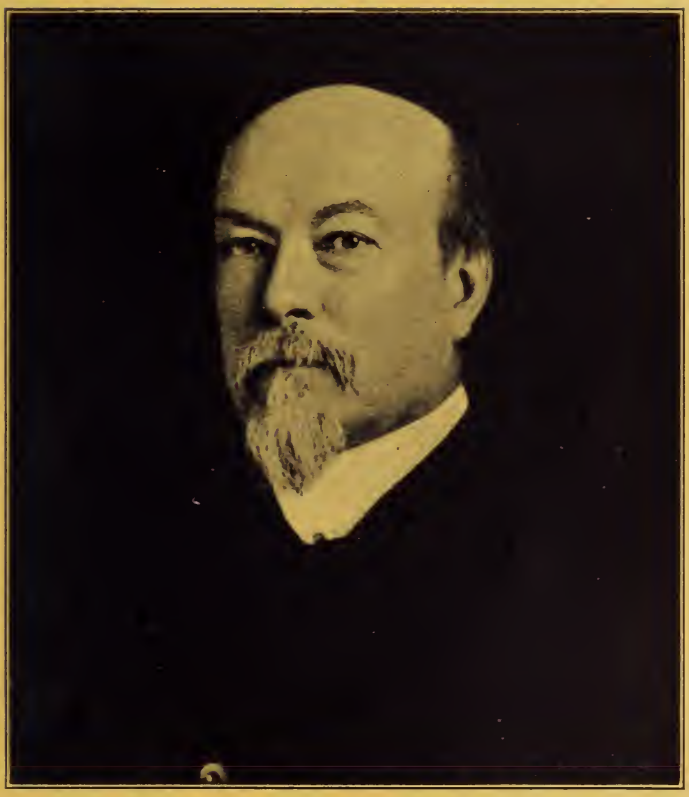
The first years after the war were ones of great privation. The writer has often heard Dr. Simons tell of his struggles to make a living at that time and of how he added to his income by singing in church choirs in addition to his medical work. In common with most of his compatriots he was practically stripped by the war and by the subsequent reconstruction days. After a long, hard struggle he began to forge ahead and early assumed a prominent part among the medical men of his city. During these lean years his intense application and diligence laid the foundation of the great success which was his in later years.

Dr. Simons began his career as a teacher of medicine early, starting in as a demonstrator of anatomy in the Medical College of the State of South Carolina. From anatomy he gravitated into the teaching of surgery and for many years filled the Chair of Clinical Surgery in his Alma Mater. Later he was made Professor of Abdominal Surgery and Gynecology which chair he filled up to the time of his death. During his life he won many honors and held many responsible positions. He was a member of numerous medical societies and a constant attendant at their meetings. Among the positions held by him may be mentioned the following:

Professor of Abdominal Surgery and Gynecology, Medical College of the State of S. C. Surgeon, Roper Hospital, Charleston, S. C. Surgeon, St. Francis Xavier Infirmary, Charleston, S. C. Surgeon, Southern Railway. Medical Examiner of Mutual Benefit and of Phoenix Mutual Life Ins. Cos. Member of the A. M. A., S. C. M. A., of the Medical Society of South Carolina; of the Tri-State (Virginia and the Carolinas); of the Americn Association of Obstetricians and Gynecologists; of the American Association of Southern Railway Surgeons, of the Medical Club; Charleston, S. C. He was also an honorary member of the Chatham County Medical Society of Georgia and of the Dorchester County Medical Society of South Carolina. He held at various times the office of President in the following organizations: South Carolina Medical Association, Medical Society of South Carolina, Southern Surgical and Gynecological Assocaition, and was an ex-vice-president of the Tri-State Medical Association. He was also a prominent Mason.

Not until Oct., 1903, did Dr. Simons marry. At that time he married Miss Florence Alexander, head nurse of the Riverside Infirmary. Mrs. Simons proved of inestimable help to him and the advent of a son a year later still further added to his joy.

In order to appreciate properly his character, one must have known him intimately, and even then it is hard to express properly the great depth of character, the indomitable will, the broad charity he possessed. He was an omnivorous reader and student. All branches of medicine were of interest to him. He spent the greater part of his spare time with his books and magazines, and was abreast of any new movement. Always conservative, he did not rush after new fads, but was not far behind the leaders in any change of real worth. Even up to his last brief illness, he was doing daily an amount of work which



Dr. Manning Simons.

would have staggered many a younger man. In addition to a large general practice, he was also a surgeon of note. After his day's work was over, he would retire to his library and then frequently study until one or two o'clock in the morning.

In his lectures the remarkable tenacity of his memory was demonstrated time after time. Often the writer heard him quote authority after authority, giving volume and page of each reference. This, combined with his habit of study rendered him a perfect mine of information.

Dr. Simons was a man of lovable character. No one will ever know the extent of his charitable works. He was continuously driving and always with a large clientèle of charitable patients. To students and younger men of the profession he was kind and helpful. In spite of his wide knowledge and experience, he was humble in his opinion of himself and always seeking to learn. He was erect morally as he was physically. In his death he was the soldier and even his last words show the soldier quality of the man; "I'm going, but I'm going with my colors flying."

He was passionately fond of music and was himself a musician of no mean attainments.

To few men is it given to attain the age of sixty-four and still be showing no waning of intellectual vigor. Dr. Simons was one of these few. When an attack of angina pectoris cut short his career, he was still as alert and clear-visioned mentally as he ever had been. His loss to the profession of his State as well as of his City was keenly felt.

IN MEMORIAM.

GUSTAV C. E. WEBER, M. D.

BY

WM. H. HUMISTON, M. D.,

Cleveland, O.

Dr. Gustav C. E. Weber was born in Germany at Bonn on the Rhine in 1828 and died at his beautiful country home "Cosy Bank" on the shore of Lake Erie, near Willoughby, Ohio, at the age of eighty-four years.

Dr. Weber came to Cleveland in the year 1856 as Professor of Surgery. At that early age he was master of his profession and so rapidly did he gain a state-wide reputation and general recognition that within five years he was appointed by Governor Todd, Surgeon General of Ohio, and given special privileges by Mr. Stanton, then Secretary of War in President Lincoln's Cabinet. This early success was attained by long and diligent study and preparation under the best physicians and surgeons in Germany, Austria and France. His associates and teachers were conducive to a high degree of attainment and this, together with his elegant physique, and most courtly manners, marked him at once as a man of remarkable capabilities.

His boyhood home at Bonn was an intellectual center where Jean Paul Richter often came. His mother was of noble birth and a woman of marked literary attainments and strong womanly qualities. His father, M. I. Weber, Professor of Anatomy, the author of several books and atlases, was a man of great renown.

Dr. Gustav Weber came to his full development in the latter sixties, when he was about forty years old, but his ripest period was from his forty-fifth to his fiftieth year. He was largely instrumental in erecting St. Vincent's Charity Hospital in Cleveland in 1863 and 1864 to take care of the wounded soldiers as they were sent north from the southern battlefields of the "War of the Rebellion." He organized a Charity Hospital Medical School and started the first medical journal in Cleveland, but did not contribute much to medical literature, as his time was

Dr. Gustav C. E. Weber.

wholly taken up with an enormous professional work, and the exacting demands of a wealthy clientel distributed over a wide area.

It was in 1898 that he retired from active surgical practice and became Counsel in Nuremberg, where he remained four years. When he departed for Germany he gave to the Cleveland Medical Library his books and instruments, as well as financial help.

Upon his return to Cleveland in 1903, he was tendered a banquet by the Cleveland Medical Association. It was a large representative gathering of the medical profession of Ohio and adjoining states. After Dr. Weber had delivered his address, his old friend and colleague, Dr. Thad. A. Reamy of Cincinnati arose to speak, but had hardly started when Dr. Weber was noticed sliding from his chair and became unconscious—the result of a cerebral hemorrhage that paralyzed his right side. He was tenderly carried to a room above by several doctors. He made a slow partial recovery and was taken to his country home to live in quiet and peace, under the loving care of his noble and capable wife, who for years anticipated his slightest wish and desires and made him comfortable until early this year, when an attack of influenza terminated peacefully his life.

Mrs. Weber and a married daughter, who lives in Philadelphia survive him.

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